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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

ECONOMISTS FOCUS ON INDUSTRIAL INFRASTRUCTURE ANALYSIS

Infrastructure Issues Timely, Important

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 1, Jan 81 pp 70-71

[Editorial introduction: "The Infrastructure of Material Production"]

[Text] The Accountability Report of the CPSU Central Committee to the 25th Party Congress took note of the special role of the infrastructure in the country's economy. At the November 1979 Plenum of the CPSU Central Committee the problems of comprehensive development of all links of the chain which joins production and ultimate consumption of social product were again singled out. Comrade L. I. Brezhnev said at the Plenum, "Everything is equally important here — transportation, production of packaging, storage, processing of output, and finally trade."

Deepening specialization, the growing complexity of production collaboration, and accelerated development of the northern and eastern parts of the country are making growing demands today, which will increase even further in the foreseeable future, on the reliability and coordination of the transportation and information network, the system of warehouses and storage facilities, water management and the like — everything that goes by the name of the production infrastructure.

The problems of the infrastructure reflect many of the conditions and components of growth in the efficiency of public production. What is the infrastructure? How and why is it developing? What functions does it perform in contemporary production and society as a whole? On the eve of the 26th party congress these issues are of more than methodological importance. The orientation of major investment, the distribution of labor resources in the national economy, and fundamental economic proportions not just in the near future but in the long term as well depend significantly on the answers to these questions.

The authors of the articles offered to the reader below have attempted to answer these questions. They present a critical analysis of the state of affairs in sectors of the infrastructure. Their purpose is to identify unsolved problems and obstacles in the path of development and outline ways to overcome the existing backwardness.

The authors endeavor to summarize domestic and foreign experience with building and improving systems that serve production and are combined under the concept of infrastructure and to outline constructive trends in development of the national economic infrastructure. A number of issues, including development of information services and the "business services" industry are beyond the scope of these articles.* These sectors of the infrastructure and the problems of their development will be treated in subsequent issues of this journal.

Backwardness of Infrastructure Reviewed

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 1, Jan 81 pp 72-84

[Article by S. A. Kheyman, doctor of economic sciences, professor at the Institute of Economics of the USSR Academy of Sciences, Moscow: "Public Division of Labor and the Infrastructure"]

[Text] What Is the Infrastructure?

In existing classifications the sectors of the infrastructure are, of course, classified as part of material production along with industry, agriculture, construction, and so on. What condition makes it possible to single out and join transportation, communications, and material-technical supply in the general category of infrastructure? This condition is their common functions in the national economy.

At all levels of production, in each subsystem, there are not only primary processes that provide the final results of the work, the production of some material output or rendering of services. In addition there are the service functions, and structural subdivisions and industrial systems corresponding to them arise to insure purposeful and uninterrupted operation and interaction of the primary processes. The complex of sectors which form, in K. Marx's words, the "general conditions" of production development and perform the functions of serving material production are the production infrastructure, an elaborate, multileveled system.

As the service functions spread and develop in various sectors and division of labor progresses, these functions become increasingly specialized, the level of technical equipment used grows, and special structural subdivisions gradually take shape on an organizational level. This is the formative process of the infrastructure. It seems that the dividing line between enterprise auxiliary services and the elements of the infrastructure that perform similar functions should be the boundaries of the primary economic unit.

As the division of labor deepens and cooperation in production expands, therefore, new subsystems of the infrastructure form such as the information

* The experience of the Volgograd Kompleks Science-Production Association of the Ministry of Tractor and Agricultural Machine Building with organization of office services was discussed in No 10 of EKO for 1979.

industry, the business services enterprises, and others. The traditional sectors of the infrastructure change and broaden their functions.

Like any other form of production collaboration, these trends need the most intensive stimulation. Precise, unconditional performance of mutual obligations in terms of volume and time is an essential condition for their development. Shortcomings in cooperative work remain the primary obstacles to specialization and tend to promote the naturalization process [in-kind economic relations] at economic units.

Subdivisions of the Infrastructure

The infrastructure of material production encompasses, in our view, the following sectors:*

1. water services — canals, land improvement and irrigation structures (except internal water distribution systems at kolkhozes and sovkhozes); industrial water supply systems;
2. all forms of transportation — roads, including side roads from the "gates" of enterprises to main roads; rolling stock; waterways and their structures; energy transportation (trunk petroleum, petroleum products, and gas pipelines, high-voltage power transmission lines, and the low-voltage rural power distribution network);
3. material-technical supply and procurement with warehouses, elevators, refrigeration facilities — storage, supply and marketing, and the stock of circulating containers and packages;
4. all types of communications;
5. the information industry, in particular the general-use sector — the system and devices for collection, transmission, and processing of information.
6. enterprises and organizations that offer business services — cost accounting [khozraschet] organizations that provide production enterprises and associations with various adjustment, technical, production organization, consultation, and management services. This category does not include planning organizations and the system of enterprises that prepare means of production; they are included within the production units.

* This classification was worked out in cooperation with doctor of economic sciences V. N. Livshits.

The last group deserves more detailed discussion. The vast scale of production in our country and long-term prospects for continued growth, the increasing scale and complexity of technical equipment supplied to sectors of the economy, and the policy of systematically deepening production specialization necessitate the formation of a complex of highly specialized business services organizations. These organizations would help production (primarily small and medium-sized enterprises) develop organizational structures, prepare and introduce automated control systems, adjust new technical systems, develop sets of industrial equipment, do space planning for production and prepare efficient plans for transportation and movement by work sections and the enterprise as a whole, introduce quality control systems, develop and apply new management systems, and so on.

It should be mentioned that employment in business service organizations in the United States rose 77 percent between 1929 and 1960 compared to a growth of 22 percent in employment in material production; between 1960 and 1975 the corresponding figures were 390 percent and 17.5 percent. By 1975 3.5 million persons were employed in this sphere; without legal services (employing 492,000 persons) the number still exceeded 3 million, which was roughly six percent of total employment in material production.

In our country the complex of business service enterprises, like the general-use information industry, is still underdeveloped. It must be built on a departmental and interdepartmental basis.

The National Economic Tasks of the Infrastructure

The first such task is supporting the multifaceted and increasingly complex links and lines of communication between enterprises and sectors of production and other spheres of public activity. The development of contemporary production, which is traveling the path of deepening the division of labor and broadening collaboration in production, magnifies the dependence of the reproduction process and its efficiency on the many diverse connections in time and space at the inputs and outputs of each of the subsystems of the national economy. Transportation, material-technical supply, communications and the information industry, which is closely tied to communications, are an active factor in realization of these lines of communication. They form the "circulatory system" and with it facilitate the circulation of physical objects in material production.

The second, equally important task of the infrastructure is to free the subsystems of public production from the numerous functions of service to primary activities and, thus, create conditions for development of division and collaboration of labor. In this respect the infrastructure stimulates specialization and organizational delineation of processes that are related to the primary activity of these elements. In this way production units are able to concentrate their efforts, resources, and initiative on efficient performance of their basic functions.

The third highly important task which is promoted by development of the infrastructure is preserving the final results of production, both the quantity of output itself and its use qualities. Many billions of tons of raw and processed materials, semifinished articles, and finished articles from

industry and agriculture are transported, stored, and again transported through all stages of reproduction of social product, from extraction of the original raw material to sale of the product for production or nonproduction consumption. Preservation of the use qualities of this vast quantity of embodied labor and precise movement of it in time and space is one of the central and critical challenges of economic development, one of the principal conditions for real economic growth. This is where the orientation of planning and economic activity to final results, to their preservation and multiplication, as outlined by the party takes material form. Comprehensive and accelerated development of the infrastructure is a crucial condition for substantially reducing losses in the national economy.

Transportation, storage and material-technical supply, procurements and marketing are elements of the infrastructure that play a key role in maintaining the stocks and forming the reserves of means of production and consumption goods that are absolutely necessary for balanced and efficient economic development. The challenge of forming reserves, the fourth challenge for the infrastructure, was specially singled out in the July 1979 decree of the CPSU Central Committee and USSR Council of Ministers on improving planning and the economic mechanism.

The formation of reserves of means of production, like reserves of mobile production capacities capable of operational changeovers to satisfy newly emerging demands, is primarily the job of USSR Gosplan and the planning organizations, of course. But the material-technical supply system, transportation, and communications can play a very significant role in this. The mobility of reserves depends greatly on them, just as it does on the precise functioning of the information industry.

The fifth task, but by no means least important, which the infrastructure helps serve is accelerating the process of reproduction, reducing the length of the production cycle, and reducing the time of the production and circulation of social products.

It is apparent, thus, that the development of the infrastructure is one of the crucial prerequisites for intensification of the entire process of reproduction.

The Infrastructure of a Mature Economy

The historical conditions of development of the Soviet economy did not permit a faster rate of growth for the infrastructure, especially for main transportation lines and communications systems and equipment. The construction of large general-purpose plants in the prewar years and, in large part, in the postwar years, did not further the differentiation and organizational delineation of functions of production service. This brought about a lag in such specialized elements of the infrastructure as trunk railroads, transportation networks (in particular paved highways), and managed internal waterways. The development of general-use material-technical supply enterprises, the elevator system and other storage facilities, and the business services industry was retarded. No specialized industry has yet formed to manufacture production and consumer containers and packages, especially

the progressive forms using cardboard and polymer or to produce pallets, shipping containers, and other components of stack and container shipping. General-purpose refrigerator technology has fallen behind significantly increased demands.

In the forthcoming five-year plan it will be absolutely urgent to accelerate the development and improvement of main transportation lines and the entire transportation system, to build up its structures, and develop the rolling stock. The urgency of this task can be illustrated by a comparison with the transportation system in the United States (see table below).

Table 1.

Main Transportation Lines, km	Soviet Union			United States		
	1950	1975	Growth	1959	1975	Growth
Railroads	116,000	138,300	21,400	360,000	322,000	-38,000
Paved Highways	177,300	660,500	483,200	3,120,000	4,903,000	1,783,000
Oil Pipelines	5,400	56,600	51,200	207,000	283,000	76,000
Total	299,600	855,400	555,800	3,687,000	5,508,000	1,821,000

In the 25 years since 1950 our country has built a total of almost 556,000 kilometers of main transportation routes on land, an increase of almost three times. During the same period the land transportation system in the United States increased by roughly 50 percent. But even in 1950, when the national income of the United States was about two-thirds of USSR national income in 1975, the United States had 3,687,000 kilometers of main transportation lines, 4.3 times as much as our country had in 1975. In the 25 years until 1975 the American land transportation system increased by another 1,821,000 kilometers, more than three times as much as the Soviet system grew. The rapid development of transportation, needless to say, promoted greater flexibility and mobility in the economy, progress in the specialization of industrial and agricultural production, and a reduction in losses.

The transportation subsystem of the infrastructure is not just a matter of main roads and rolling stock. It also comprises the organization of all freight traffic in the national economy as a single, purposefully directed freight flow. The great number and diversity of participants in the national economic transportation system, the intricate links among them, and the technical-economic characteristics of each shipping party and each type of freight demand painstaking coordination of all elements of the process. The principles of the natural [in-kind] economy and the isolated departmental approach to the organization of shipping, loading, and unloading are intolerable here and threaten breakdowns and national economic losses.

Customers often receive railroad cars of types and cars loaded in such a way that the freight receiver's equipment cannot unload them. Twenty-ton containers arrive at places which have five-ton cranes; cement arrives in tank cars with pneumatic unloading to be met by electric lift trucks with fork grapples, and so on. Many ministries and departments develop their own types of pallets, containers, and other means of shipping.

We lack a unified management complex for shipping national economic freight. The forms of transportation are organizationally distinct: the Ministry of Railroads, Ministry of the Maritime Fleet, Ministry of the River Fleet, Ministry of Fishing, Ministry of Timber, Pulp and Paper, and Wood Processing Industry, Aeroflot, and almost 20 other republic ministries and departments with their own large transportation systems.

As a result, increases in the rated speed of means of transportation are often practically "eaten up" by the time that freight spends waiting at transportation intersections and by unwise division of labor among forms of transportation. The operating speed, the speed at which freight moves from shipper to receiver, is much lower than the actual speed of the means of transportation.

The press reports regularly on the dispersion of motor vehicle and, in part, water transportation among many different departments. General-use motor vehicle transportation accounts for just 29 percent of vehicle shipping; about 280 billion ton-kilometers of shipping is done by enterprises' "own" vehicles. The resulting increase in costs is more than 5 billion rubles a year.

Railroad sidings with a total length of 131,000 kilometers are dispersed among the departments, or more accurately even the enterprises. Their shipping (in 1977 it was more than 10 billion tons) is almost triple the volume of shipping by the Ministry of Railroads. The trend toward naturalization of the economy that is making itself known threatens great losses. Similar trends occur in other sectors of the infrastructure.

In addition to accelerating construction of main transportation lines and building technical equipment and structures appropriate to them, we must insure the compatibility of all equipment, work fronts, and lines participating in the freight flow and see that the technological scheme and general system of loading and unloading complexes is mutually coordinated and based on a uniform technical policy. There must be planned, progressive coordination of production not only of general-purpose but also specialized shipping and hoisting-transporting equipment, warehouse and packaging equipment, and containers and packages.

Coordination and technical equipping is behind the times in the material-technical supply and marketing system, an important element of the infrastructure. Organizations of Gosnab provide only about half of the wholesale commodity traffic of the industrial sectors that produce means of production. The vast network of depots, warehouses, and (of course, far from adequate) equipment and the production of many types of packages and containers are spread out over many departments and enterprises.

The situation is aggravated by the general atmosphere of "shortages," which inclines enterprises to accumulate stocks of commodity-material assets. According to our calculations, in 1978 production stocks in USSR industry were 10 rubles 51 kopecks per 100 rubles of gross output. In comparison with 1965, when the figure was 11 rubles 30 kopecks, a slight decline has been achieved: seven percent in 13 years. But the stocks concentrated at

consumers of the means of production significantly exceed the analogous figure for U. S. industry, where it was \$4.59 per 100 dollars of output sold in the same year, that is, scarcely two-fifths of the Soviet figure. If we were to reduce the actual norm of stocks in domestic industry to the American level, the volume of stocks of raw and processed materials in 1978 would have been limited to 26.5 billion rubles, not 60.7 billion. This would have freed 34 billion rubles of commodity-material assets, a very considerable amount.

The situation with packages and containers is very poor. Lumber, the least economical type, remains the predominant material. There are very few cardboard and polymer containers and packages. No specialized and organizationally distinct sector to produce packages and containers has been established. The situation with the production of packaging equipment is the same, if not worse. We still do not have conveyor lines in which the final stage is packaging the finished product using the most convenient forms for the customer, whether we are discussing output that is shipped as semifinished parts, parts, or assemblies for subsequent processing and assembly or retail trade enterprises which sell the product to the ultimate consumer.

In practice, employees of trade enterprises often do the packaging manually, with great losses and inconvenience to the customer. Means of production often arrive in bulk, are then disassembled, sorted out, and prepared for production by an enormous army of subsidiary workers. But packages and containers should be a subject of comprehensive planning as an essential part of the plan of the entire industrial process of producing, handling, and selling social product. The production of contemporary packaging equipment and progressive packages and containers is a worthy subject of attention for specialized sectors of industry with sophisticated equipment.

The country still does not have a uniform system for water management on a regional-sectorial basis. Incidentally, in the United States the president has had a Council on Water Resources and for 20 years now its regional planning commissions have attempted to develop comprehensive plans for water management by river basins, six large management regions, and the country as a whole.

In reality, we have not yet begun to form general-use information industry enterprises: computer centers offering automated and, particularly, remote data processing services on cost accounting principles. The country has a significant amount of modern data processing equipment but it is dispersed at departments and enterprises.

But the available stock of modern information equipment and the scale of domestic production of this equipment are sufficient for us to begin work in the 11th Five-Year Plan toward practical solutions to the problems of planned development of a network of general-use information industry enterprises, working out a system and forms for its links with user organizations, and determining the principles of its financing, evaluation of its output, and procedures for paying for its services. Decentralized

expenditures to equip and operate enterprises' "own" information subdivisions (and frequently they are also formed within an enterprise or in undifferentiated sections and particular jobs) are already so great that the cost of establishing information industry elements will be repaid quite quickly.

The essence of the specialization process involves not only organizing specialized production of particular material goods, services, and their functional components, but also creating and manufacturing specialized means of production planned to perform definite functions more productively and efficiently. The development of specialized means of production is especially urgent for the development and improvement of work by the sectors of the infrastructure.

With respect to transportation this means producing specialized means of transportation: railroad cars adapted for shipping various types of freight such as grain, fertilizer, cement, motor vehicles, packages, stacks, and the like; special-purpose maritime and river vessels; trucks of different load capacities; transportation and warehouse equipment that is convenient to use for loading and unloading, can be driven into warehouses and railroad cars, and can handle freight in various shapes and dimensions. The opportunities to organize production of specialized containers, packages, and packaging materials are exceptionally important and broad: containers and packages that insure preservation of the object itself and its use qualities and prolong the storage time.

Communications, the information industry, and the sphere of business services also need a broad range of specialized equipment. The systems approach to problems of the infrastructure dictates the necessity of rapid development, equipping, and purposeful siting of the sectors of machine building and construction that specialize in building and equipping enterprises of the infrastructure and developing the sectors that produce packaging materials, especially cardboard, paper, and polymer packaging.

The consistent orientation to specialization and concentration has become a mandatory condition for effective development of the information industry and the group of material-technical supply, procurement, and marketing sectors and it should provide the basis for development of the business services enterprises and organizations. The point is that solving the problems of organizing, preparing for, and servicing production at a contemporary level is beyond the capabilities of not just small and medium-size enterprises, but sometimes even of large enterprises. For such a giant economy as ours it is vitally necessary to establish and develop a business services sector on a sophisticated level, with contemporary equipment, that always performs its functions competently and on time. A set of equally complex and urgent problems exists with respect to the development of the auto service sphere.

Expenditures and Results

It must not be overlooked that development of the infrastructure demands significant resources, a considerable contribution by science and technology,

and solving a number of structural and organizational problems. This refers to main transportation structures, roads, and means of transportation, specialized rolling stock, hoisting, transporting, and warehouse equipment, refrigerator installations, packaging equipment, and modern packaging materials. The sectors of the infrastructure have a high capital-output ratio: in transportation and communications it is 3.3 times greater than the average for material production. Therefore, overcoming the backwardness of the infrastructure and matching it to the growing needs of the economy will require large capital investment. The 25th Congress of the CPSU emphasized the need to appropriate considerable resources for accelerated development of the sectors of the infrastructure.

Capital investment resources are limited, of course. But the solution to this problem with reference to the infrastructure has important distinctive features. Development of the infrastructure very quickly eliminates major losses and thus opens up and creates very significant resources. Here are just a few possible lines of development of the infrastructure that would provide national economic savings of several billion rubles apiece:

- a. eliminating losses from inefficient distribution of shipping by forms of transportation, lack of departmental coordination, and inadequate development of the material-technical base of transportation;
- b. eliminating losses caused by the inefficient structure of the fleet of motor vehicles and the shortage of trucks with small (up to two tons) and large (more than five tons) load capacities (5.5 percent today instead of the recommended 19.5 percent);
- c. elimination of losses in related sectors because of the inadequate development of transportation, including the enormous losses of agricultural output;
- d. elimination of grain losses during storage, drying, and supplementary processing, losses of potatoes, fruit, and vegetables during storage, losses of agricultural output in trade; eliminating losses caused by problems with packaging.

The directly calculated annual national economic losses associated with the backwardness of the production infrastructure, by fairly cautious estimates, exceed capital investment for its development. Moreover, they are entirely commensurate with the amount of strategic expenditures needed to overcome this backwardness and thus avoid these losses.

In solving the problem of development of the infrastructure a basic notion, which unfortunately is far from generally accepted, is that so-called "on-going losses" — the enormous resources of labor, means of production, and consumption objects which are lost or partially or completely lose their use qualities — on the one hand, and the investment needed to eliminate the causes of these losses on the other are interchangeable. The losses are unused resources.

The managers of the RSPSR Ministry of Highways are absolutely correct in proposing that investment in road construction, construction of truck plants, and agriculture be reviewed together. These three channels of capital investment are interdependent. The average commercial [counting stops] speed of trucks is inexcusably low because of bad roads. Good roads will double speeds and reduce the need for trucks. Losses of agricultural products would be lowered, which would mean a decrease in the need for investment to increase agricultural output lost because of bad roads, warehouses, storage facilities, and the like.

No matter how paradoxical it may seem, under contemporary conditions the most efficient and rapidly repaid investments are investments to eliminate the sources of losses. The sectors of the infrastructure are first in this line.

Therefore, we must have systematic, complete records of losses in the national economy classified by sectors, regions, and types and causes of losses. Planning and directive organizations must know every detail of the changing anatomy of losses and take this information into account when working out investment programs.

Solving the problems of overcoming backwardness and developing the infrastructure requires not just major material resources but also comprehensive target-program planning and support. Purposeful development of the associated sectors is important: machine building, which supplies equipment to elements of the infrastructure, in particular road building and hoisting-transportation equipment; production of modern means of communication; specialized construction industry sectors; the pulp and paper industry; production of progressive materials for road surfaces, and so on.

It will be necessary to overcome vigorous trends to naturalize the economy in shaping our infrastructure. Management of the infrastructure will also demand development of the target program approach.

A highly developed infrastructure with sophisticated equipment is a condition for growth in the final results of public production and raising the rate of economic development, a condition for intensification and increasing the mobility and maneuvering potential of the Soviet economy.

Analysis of Concept of Infrastructure, Soviet Situation

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 1, Jan 81 pp 89-94

[Article by B. Yu. Levit, candidate of economic sciences, V. N. Livshits, doctor of economic sciences and professor, and I. A. Tarakanova, All-Union Scientific Research Institute of Systems Research of the USSR State Committee for Science and Technology and the USSR Academy of Sciences, Moscow: "The Efficiency of Public Production and the Infrastructure"]

[Text] The infrastructure has a dual role during the scientific-technical revolution. On the one hand, it does not itself produce physical output and plays the passive role of a system of "channels," performing subsidiary,

service functions. On the other hand, it has a direct impact on the rate of growth of the national economy by actively influencing the organization and location of production, stimulating (or retarding) its development, and to a significant degree determining the way of life of the population.

The social impact of meeting public needs for communications services is very great: it is estimated to exceed 5 billion rubles a year. Capital investment in communications equipment is repaid by the savings in ongoing operating expenses in less than one year.¹ In the future the effect of development of the system of communications channels will become even greater as it is used for exchange of information among distant computers, for rendering a broad range of supplementary services to the population, and so on.

The influence of development of other elements of the infrastructure on the prime cost of output, labor productivity, and level of public well-being can be clearly traced. A well-developed infrastructure plays a decisive role in accelerating the turnover of material resources and makes it possible to reduce expenditures for the development of the producing sectors, reduce losses of finished output and its prime cost, improve production collaboration and specialization, raise the efficiency of management, and so on.

Economic investigations of the infrastructure are being carried on intensively in our country and abroad. The work of Hungarian specialists deserves attention with respect to international comparison of infrastructures.² They have produced an analysis of three types of infrastructure development. The first type is where the infrastructure takes shape before the stage of rapid industrial development begins. The highly developed Western European countries can be classified as this type.

In the second type the infrastructure emerges and develops simultaneously with the formation and expansion of basic sectors of industrial production, as the needs generated by production and consumption emerge. This kind of development is characteristic of the American model.

The third type is typical of the economic development of the Eastern European socialist countries and the USSR after World War II. The development of the infrastructure is held back in comparison with the basic sectors. The delay can be explained by a number of historically objective factors, above all the fact that unlike countries of the first two types, in the initial stage of industrialization the socialist countries developed the capital-intensive sectors of heavy industry at an accelerated rate.

The figures for transportation and communications in the years 1965-1978 give some idea of the place of the infrastructure in the Soviet economy (see Table 2 below). The seemingly small share of these key sectors of the infrastructure in gross social product (just 4.4 percent in 1978) with a significant share (20.7 percent) of productive capital and other resource indicators is noteworthy. This result comes in large part from the methods of recording the contribution of the infrastructure to gross social product. Charges based on the existing rate schedules for the services of the infrastructure sectors cannot fully reflect their true significance.

Table 1. Share of Infrastructure of Material Production, percentage

	1950	1960	1970	1975
In Gross Social Product	7.0	7.6	7.6	7.7
Included in above: Transportation and Communications	3.34	4.05	4.11	4.24
Trade, Public Catering, Material-Technical Supply, Procurement	3.44	3.57	3.53	3.49
In Fixed Productive Capital	31.3	29.0	27.5	26.8
Included in above: Transportation and Communications	25.6	23.7	21.9	21.2
Trade, Public Catering, Material-Technical Supply, Procurement	5.8	5.3	5.6	5.6
In Number of Persons Employed in Material Production	10.2	13.2	16.4	18.2
Included in above: Transportation and Communications	4.8	6.7	7.3	8.0
Trade, Public Catering, Material-Technical Supply, Procurement	5.4	6.5	9.1	10.2
In Production Capital Investment	22.5	21.8	19.9	19.7
Included in above: Transportation and Communications	19.6	16.4	15.5	16.5
Trade, Public Catering, Material-Technical Supply, Procurement	2.9	5.4	4.4	3.2

The results of the work of the infrastructure appear chiefly outside the sphere itself and are absorbed by the economic indicators of the base sectors. Therefore, an indicator of the role of the infrastructure calculated on a rate basis is several times lower than an estimate obtained by special research that identifies not only the direct participation of the infrastructure sectors in production of gross output but also the creation of conditions essential for its production³. A systematic quantitative accounting of these factors and, therefore, an evaluation of the impact of the infrastructure sectors on the efficiency of production as a whole are complex matters for which methods have not been adequately developed. Therefore, this kind of consideration has not become widespread. This appears to be one of the reasons for underestimation of the infrastructure and the resulting lag behind the basic sectors of material production.

The level of development of the infrastructure sectors can be characterized by certain consolidated indicators. The Engel coefficient, for example, can give an indirect characterization of the level of available transportation services to a national economy. This coefficient is the ratio of the calculated length of all main transportation lines (in kilometers including pipelines) to the square root of the product of the settled territory (in hundreds of square kilometers) and population size (in tens of thousands). In 1975 the Engel coefficient for the USSR was 43; for the United States it was 179.

Table 2. Share of Transportation and Communications,
percentage

	1965	1970	1975	1978
In Gross Social Product	4.4	4.0	4.3	4.4
In Fixed Productive Capital	23.1	22.0	21.2	20.7
In Number of Employees	10.7	10.3	10.5	10.5

	7th	Five-Year Plans		1978
		8th	9th	
In Capital Investment	10.1	9.6	10.8	12.5

Another indicator is the specific water consumption. The average for the USSR is at the level of the Western European countries. The differences between large and small cities for this indicator abroad are minor, however, whereas in our country they are substantial.

The standard method used for a comparative evaluation of the general level of infrastructure services to a national economy in world practice is the Bennett method. The technique was designed to obtain a single quantitative characterization of the infrastructure synthesized from a set of particular indicators of its development. Among the indicators that may be used are the density of the transportation system (ratio of total calculated length of transportation routes to the total area or developed area of the country), density of the telephone network (number of telephones per 100 inhabitants), specific trade area, specific water consumption, and others.

Following the Bennett methodology in international comparisons the maximum value of each indicator is taken as the base.⁴ The relative availability of infrastructure services for the particular indicator is the ratio of the value for the particular country to the base value. The general characterization of the availability of a country's infrastructure services is calculated as the sum of the particular coefficients of relative availability. Calculations using the Bennett methodology indicate that the level of availability of production infrastructure services in the USSR is several times lower than in the United States and also lower than the figure for many other industrially developed countries.

The correspondence between the level of development of the infrastructure and of the sectors of material production is a decisive criterion of the availability of infrastructure services to a national economy. The degree of correspondence may be determined only through detailed analysis of the interaction of the two spheres, above all after an evaluation of losses of resources and finished product because of an inadequate infrastructure. There are a number of difficulties in estimating losses. This requires the development of special techniques and models because normative and document-based figures for loss today vary widely from expert estimates. The

following classifications indicating the inadequate development of the infrastructure and shortcomings in its operation may be adopted as a first approximation:

1. losses because of failure to perform work (for example, the death of unharvested timber, spoilage of agricultural output because of lack of transportation, administrative losses owing to unreliable communications, and so on);
2. increase in prime cost in the basic sectors of material production;
3. losses from poor work (losses in the process of transportation and storage, delay in the rate of turnover of working capital, and so on);
4. increase in operating cost in the infrastructure itself as the result of inefficient operations;
5. losses related to social aspects of the functioning and development of the infrastructure.

As an illustration we will cite figures on losses caused by transportation backwardness.⁵ The national economic loss in industrial production alone as the result of failure to fully meet shipping demands reaches 6.5 billion rubles a year. Losses to agriculture because of untimely hauling and spoilage of output exceed 4 billion rubles.⁶

Annual losses of coal during railroad shipment are calculated to be 186 million rubles, while losses of ore are estimated at 40 million rubles. About 10 percent of the cement produced, 17 percent of the mineral fertilizer, and 8-11 percent of the bricks are lost during shipment by rail. The damage from losses of freight during railroad shipment reaches 20 percent of the total operating expenditures of the Ministry of Railroads.

A rough monetary estimate of that part of the social impact of establishing a thorough network of roads in the country related only to improved medical service and consolidation of schools in rural areas is about 600-800 million rubles.⁷ Similar figures illustrate the large potential for reducing losses caused by failure to provide the national economy with various elements of the infrastructure.

According to preliminary calculations and expert estimates, the loss from shortcomings in development of the intersectorial infrastructure is several tens of billions of rubles. The approximate structure of the loss, in percentages of the total, is as follows:⁸

Transportation	41
Included in above: spoilage of agricultural output because of inadequate development of the transportation system, low traveling speeds, and shortage of rolling stock	11

Communications	12
Material-Technical Supply	17
Included in above: spoilage of output because of poor storage conditions	9
Extra costs of storing output	3
Water Supply	15
Included in above: failure to deliver water	7
Discharge of impure waste water and use of con- taminated Water	5
Engineering Infrastructure	15

The role of the infrastructure increases as the scale of production grows and its organizational-economic mechanism becomes more complex. Therefore, maintaining the established proportions in levels of development of the infrastructure and basic sectors of material production would mean, despite the adaptation of production to conditions of infrastructure service, that the increase in losses would surpass economic growth. By the end of the century in this case, according to calculations, losses would be more than twice the gross social product in 1940.

The inadequate level of the infrastructure and the quality of its service to the country's economy can be explained to some degree by the characteristics of investment policy in the postwar five-year plans. As the table shows, the proportion of fixed production capital of transportation and communications in material production declined by 2.4 percent between 1965 and 1978. The inadequacy of investment was felt with particular acuteness in transportation where the slow growth in fixed capital led to a tendency to exhaust reserves, which is characteristic of the railroads today.⁹

The nature of investment policy was determined by objective factors: the necessity of restoring the national economy, accelerating the development of a number of industrial sectors and agriculture, building up the country's defense capability, and so on. It is not impossible, in addition, that the distribution of capital investment was influenced by the fact that, on the one hand, the sectors of the infrastructure are service sectors and do not create new physical output. On the other hand, its subdivisions require long periods of time to build fixed capital, require significant reserves for normal operations, are limited in territorial interchangeability, and so on.

The slowdown in growth in capital investment in the infrastructure is also related to the prolonged payback period and the low efficiency of capital investment from the standpoint of the infrastructure sectors themselves. For example, large capital investments in transportation often are not paid back (without considering the nontransportation impact) within normative periods for increasing the profit of transportation enterprises by reducing prime cost and increasing traffic turnover. The idea of the low efficiency of investment in the infrastructure is a consequence of underestimating the results of its development figured without taking account of the interests of the national economy as a whole.

The backwardness of the infrastructure can only be overcome by the concentrated efforts of economic sectors to develop and carry out such comprehensive target programs as "development of the mainline transportation system," "establishment of a uniform water supply system," "development of the country's warehouse facilities," and others. They can involve not one, but several infrastructure subsystems. This is precisely how Comrade L. I. Brezhnev stated the matter in his speech at the November 1979 Plenum of the CPSU Central Committee. "The situation in transportation," he said, "must be changed for the better in the near future. But this is not enough for a fundamental solution to the transportation problem in the long run. We must develop a long-term comprehensive program for the development of transportation which will absorb the best achievements of scientific-technical thought. This program can be expected to cover the questions of the development and interlinking of all forms of shipping."

It is perfectly obvious today that we need a program for development of the transportation-warehouse system which takes into account the interchangeability of transportation and storage capacities. Lack of coordination between them leads to serious economic losses. During the harvest period, for example, twice as many closed railroad cars are needed. Because the necessary reserves are lacking, this increase takes place at the expense of shipments of machine building output, consumer goods, and the like. Comprehensive, mutually coordinated planning of transportation and the warehouse system within the framework of a general target program will permit a significant reduction in national economic costs.

Transportation expenditures in 1978 exceeded 90 billion rubles. This figure can be cut in the national economy by taking steps as part of a target program to improve the planning and streamlining of shipping, distribute it more wisely by forms of transportation, fully mechanize and automate loading operations, and increase the proportion of freight delivered in containers and on pallets. The savings can be 10-10.5 billion rubles a year.¹⁰

Widespread introduction of stack and container shipping offers major reserves for reducing national economic losses. Calculations show that containerization of freight provides a savings of roughly 11.6 rubles per ton for packaging and loading-unloading work. Up to 1,500 workers with annual wages of about 3 million rubles are freed for each million tons of container shipping. The savings for stack shipping is estimated at two rubles per ton; this type of shipping frees roughly 900 persons for each million tons of freight.¹¹

The economic mechanism by which the infrastructure interacts with material production, the service sphere, and the population also needs improvement. The specific features of the infrastructure give rise to certain difficulties in choosing its planning indicators. At present most of them are physical indicators (for example, the indicator of freight turnover in transportation) which does not stimulate efficient activity and development of the infrastructure. It would appear wise in planning for infrastructure sectors to switch to cost indicators, even though this would bring about a number of difficulties, if only because the payment for infrastructure services does not generally reflect the national economic impact of its activities.

Many large components of the national economic losses caused by shortcomings in the development of the infrastructure or poor quality services by its sectors are not actually reflected in the economic indicators of its work. The enterprises of transportation, communications, and material-technical supply are fairly profitable; their profitability is 10-30 percent. The technical-economic indicators of the infrastructure also reflect national economic losses caused by the unsatisfactory work of its subdivisions. One possible step would be to institute a substantial penalty, commensurate with the amount of the loss, where a client refuses the service or the service is performed poorly.

The time has also come to modify the system of charges for the services of infrastructure sectors. A payment for use of water and certain other measures were envisioned by the decree of the CPSU Central Committee and USSR Council of Ministers entitled "Improving Planning and Strengthening the Influence of the Economic Mechanism on Raising Production Efficiency and Work Quality." The pay principle forces clients to cut back on infrastructure services that are inefficient from a national economic standpoint. Such a program of measures could stimulate accelerated development of the infrastructure, which is an essential condition for intensification of public production, improving its efficiency, and raising the public standard of living.

FOOTNOTES

1. Lyubanskiy, M. M., "Certain Characteristics of Determining the Economic Efficiency of Capital Investment in the Communications Sphere," in the anthology "Problemy Funktsionirovaniya i Razvitiya Infrastruktury Narodnogo Khozyaystva" [Problems of the Functioning and Development of the National Economic Infrastructure], Trudy Seminara VNIISI, Moscow, 1979.
2. Cernok, A., Erlich, E., and Sziladi, D., "The Infrastructure in International Comparison," Budapest, 1974 (Russian translation from Hungarian).
3. Such an evaluation does not even include, as a rule, all national economic expenditures related to the activities of the infrastructure. Thus, transportation expenditures in the national economy, according to the estimates of the Central Scientific Research Institute of the Ministry of Railroads, were roughly 86.7 billion rubles in 1977, but just one-third of them were shipping costs, which are what the transportation ministries use to fix operating expenditures. See Shafirkin, B. I., "Sokrashcheniye Transportnykh Zatrato v Narodom Khozyaystve" [Reducing Transportation Expenditure in the National Economy], Moscow, "Znaniye," 1979.
4. The maximum values of different indicators, of course, may be reached in different countries.
5. No regular records of losses from shortcomings in development of the infrastructure are kept, so we are forced to limit ourselves to particular investigations and expert estimates made at different times.

6. Mitaishvili, A., "Development of the USSR Transportation System," VOPORSY EKONOMIKI, 1980, No 3.
7. Yandolovskiy, I. A., and Lokteva, R. N., "The Socioeconomic Aspect of Public Transportation (Using the Example of Rural Public Health)" TRUDY IKTP, Vol 46, Moscow, 1974; Yandolovskiy, I. A., and Lokteva, R. N., "The Transportation Problem of the Rural School," *ibid.*
8. Tarakanova, I. A., "Methodology for Recording the Impact of the Development and Functioning of the Infrastructure, in the anthology "Problemy Funktsionirovaniya...", " *op. cit.*
9. The share of capital investment in railroad transportation has declined in the postwar decades (from 7.7 percent in the Fourth Five-Year Plan to 2.6 percent in the Ninth Five-Year Plan and first years of the 10th Five-Year Plan).
10. Shafirkin, B. I., and Oparin, Ye., "The Role of Transportation in Raising the Efficiency of Public Production," SOTSIALISTICHESKIY TRUD, 1979, No 8.
11. "Sovershenstvovaniye Metodov Opredeleniya Effektivnosti Kapital'nykh Vlozheniy na Transporte" [Improving Methods of Determining the Efficiency of Capital Investment in Transportation], Moscow, "Transport," 1978.

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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

PROPOSED REORGANIZATION OF SOVIET PATENT SYSTEM DEBATED

Editorial Comment

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 80 pp 73-74

[Article: "The Soviet Patent. What Should It Be?"]

[Text] In the decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality" there is a section concerning the methods of expediting technical progress. It is aimed at increasing the interest of the developers of new items and technological production methods in making Soviet technology the most advanced and effective. Here the organization of invention--both its creative aspect and its organizational aspect: systems of the recognition of inventions and their use in new technical developments--plays a considerable role.

EKO has already directed attention to this important component of technical progress. The publication of a selection of articles in the first issue of the journal for 1979 evoked an extensive response. Meeting the desire of the readers to continued the constructive discussion of the problems of invention, we are publishing a new selection of articles which present different points of view on the problem of the recognition and introduction of inventions.

Reorganization of Patent System

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 12, Dec 80 pp 74-84

[Article by Candidate of Technical Sciences B. A. Minin, All-Union Scientific Research Institute of State Patent Examination (Moscow): "Proposals on the Reorganization of the Soviet Patent System"]

[Text] A general rule was established 2,500 years ago in the ancient Greek city of Sybaris, the citizens of which, as can be guessed, were Sybarites: a cook who had invented a new dish was given the exclusive right (privilege) to prepare this dish for a year. Much later the receipt of privileges, which were issued as a favor of the monarch, meant the possibility of escaping the influence of the guild, in which

no one dared to stand out among the other workers. Unfortunately, the system of privilege practically did not provide for the protection of the exclusive right, and a competitor, without investing anything in the development, could steal the secret and engage in production. Then the first patent law, which introduced the principle of issuing a protective document--a patent--for an invention, appeared in Venice in the late 15th century. Soon other countries, for the purpose of stimulating the development of inventions, also began one after another to pass patent laws. A patent is a document which is issued by a competent state organ and attaches to the patent holder the exclusive right to the use of his invention for a specific period.

Why is patent protection necessary? While filing an application for a patent the applicant pays a fee, and not a small one. For example, in the FRG about 800 marks must be paid just for filing an application, while upon issuance of the patent the annual fee increases appreciably with each year. Why does the applicant agree to such costs? Under the conditions of the effect of a patent a check for innovation is literally a matter of life and death of the businessman. If it turns out that the output of a just built plant comes under someone's patent, the businessman has to purchase a license or the output will be seized.

It is claimed that the patent in the capitalist economy played and continues to play a noticeable motivating role. In striving to "bypass" a prevailing patent the competitor begins to seek new solutions to the question: should I carry out my own developments, which--be it only in a few instances--will make it possible to create something new and more efficient? A new sphere of effective capital investment, a new area of protection, which other businessmen and inventors begin to try to bypass, are created. Thus, society moves along the path of scientific and technical progress step by step, rung by rung.

However, the patent system also has another side. It complicates the extensive use of inventions and places inventors and patent holders under exceptional conditions with respect to society at large. That is why during the first days of the existence of the Soviet state the decision was made to replace the patent with a new form of protective document--the authorship certificate. Unlike the patent, it certifies only the authorship of the invention and gives him the right to receive the appropriate compensation, while the right to use the invention is made over to the state, to the entire socialist society.

The first Soviet authorship certificates were issued in exchange for the patents already received earlier by inventors. Later the authorship certificate became dominant in all Soviet invention law and the law of several socialist countries. The patent--in limited form--has been preserved in our country, as an exception to the general rule, mainly for foreign firms and citizens.

Enterprises, design bureaus and institutes, at which up to 80 percent of the registered inventions are developed, are the base for the creative activity of inventors in our country. Of the 50,000-70,000 inventions registered annually in the USSR approximately a third are used, the rest remain as the basis for selection, comparison and subsequent scientific and technical research. For comparison let us note that during the more than 100 years of existence of the patent system in tsarist Russia less than 40,000 inventions were registered.

During the years of Soviet power inventors have been issued more than 600,000 authorship certificates, each of which is a distinct landmark in the development of its field of technology. In our country a single state organ--the All-Union Scientific Research Institute of State Patent Examination--is engaged in determining the importance of this landmark and establishing the novelty of what has been done by inventors. Applications for proposed inventions, in each of which the essence of the invention is set forth according to a special formula and a description demonstrating the competence of the claims of the author is given, are the raw material for the All-Union Scientific Research Institute of State Patent Examination.

In the process of inventing and drawing up an application the inventor is sure that he has not borrowed anything from anyone. However, in our country, as in many other countries, the demand of world novelty is made. This means that the examination should establish whether there was something similar in the world at the time of the filing of the application, whether it is possible to infer from the information published prior to this a claimed solution by a simple logical (uncreative) means.

Something Must Be Changed in the Existing System

According to our legislation it is considered that an inventor gives the fruits of his creative work to the state, while it worries about the introduction, ensures the obtaining of an impact and distributes it among the members of society. But are we properly gathering the harvest from the development of inventions? Where the patent (not the authorship certificate) is in effect, the patent system, in establishing the spheres of action of one invention or another, also determines the economic boundaries of the interaction of inventors and the enterprises adopting the invention. The authorship certificate cannot determine these interrelations, since the inventor turns over to society (each enterprise) the result of his labor free of charge. But then it turns out that when choosing one technical solution or another it is all the same to the enterprise whether or not it is new, whether there is an authorship certificate for it or whether it has been set forth on the pages of IZVESTIYA. If only it is efficient and effective. Perhaps, then, we do not need an invention system at all? It turns out that, yes, we do need one. The point is that it performs two most important national economic functions: an informational and a stimulating function. And if it did this in the best way, it would be priceless! But it is necessary to begin the explanation, apparently, with the far-reaching role of invention in any society. The point is that owing to the great efficiency of the labor of inventors it makes sense to lay in the products of their creative activity. Therefore each industrially developed state maintains and adds to its own patent files--the basis of the technical future of the country.

The question of introducing inventions is becoming and should become much more urgent than with the fruits of uncreative activity. A year of red tape with the introduction of an invention, which provides an impact of 10 rubles per rubles of expenditures, is a 10-fold greater loss than the delay with the introduction of an "unpatented" development with an effectiveness of 1 ruble per ruble. Let us multiply 9 rubles by the volume of introduction and the waiting time and we will obtain the price of our tolerance of bureaucrats and procrastinators.

The national economic function of the development of inventions consists in the destabilization and effective updating of social production, while the role of its

social organization consists in increasing the effectiveness of this updating. There were and will be inventions regardless of the existence of a commission of experts and other institutions. But the properly organized development of inventions (in particular, the organization of appraisal) should yield an impact many times greater. In our country there are great reserves here. The fact that one invention in three is introduced in our country cannot arouse particular alarm: for it is necessary for there to be something to choose from. But if only 1 percent of the potential of inventions is used in our country, this cannot but cast doubts on the correctness of the existing organization of the use of inventions, beginning with appraisal.

When analyzing the state patent system¹ the following questions require discussion:

/Is the existing protracted appraisal justified/ [in boldface], when in a year of delay of publication the patent information loses on the average 30 percent of its value?

/Is such strict appraisal for world novelty necessary/ [in boldface], if 98 percent of the inventions will never go beyond the national boundaries, while within the country the authorship certificate does not hinder or help anyone?

/Is such expensive appraisal expedient/ [in boldface], when the amount of the author's compensation regulated by it in practice does not exceed the total expenditures necessary for its organization and performance?

/What is the purpose of such "precise" appraisal/ [in boldface], when it determines only the authorship and the amount of compensation? At one time, after taking the right step--replacing the patent by the authorship certificate--we forgot to change the essence of appraisal.

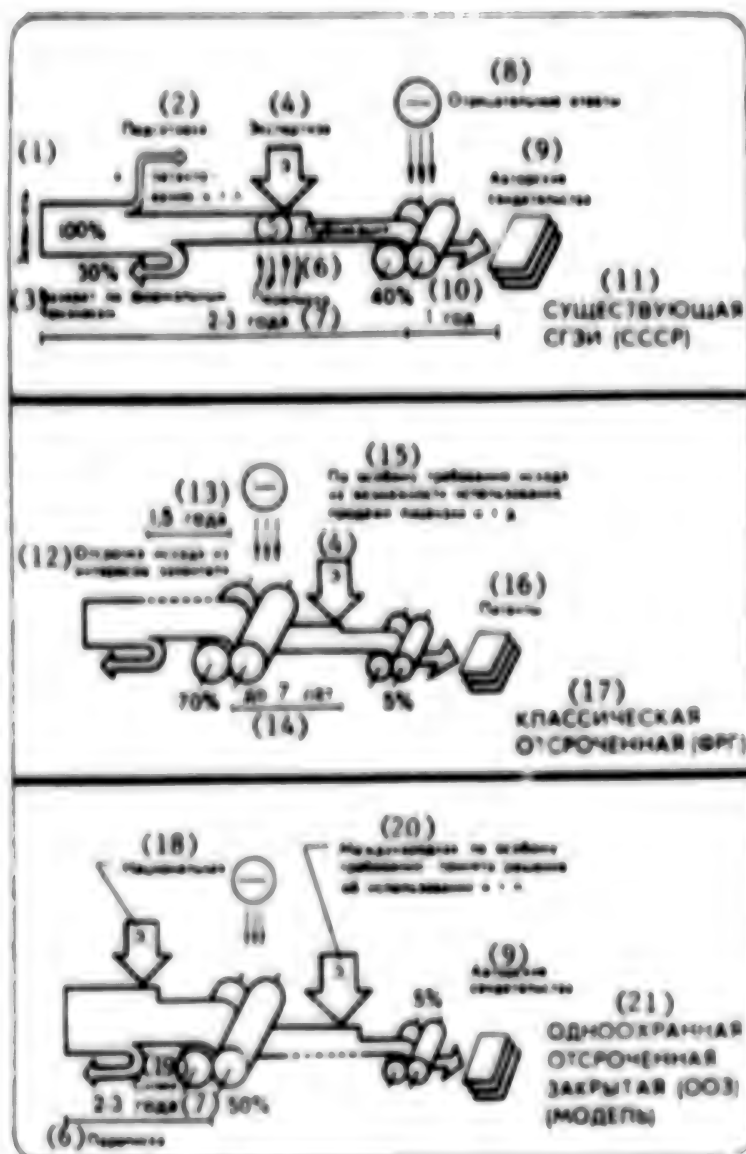
The capitalist patent system stimulated a search for new solutions, bypassing the protective document. We do not need to do this, since everyone can use everything and free of charge. The best must be chosen, for which neither a patent nor an authorship certificate, but precise information on the effectiveness and the promise of the proposal and the reliability of the data is necessary. For the present the value of patent descriptions is very relative, since so far patent information is no more effective than newspaper articles, although it is more systematized and concise.

The Main Traits of the Proposed System

The patent system in many countries is being improved intensively. In particular, the deferred system of appraisal has emerged and is being developed. It presumes the introduction of preliminary protective publication and gives the author (applicant) the right in the course of several subsequent years (usually 7-10), when he has appraised thoroughly the gain from his proposal, to demand for an additional fee

1. It is not totally correct to call the public organization of invention in the socialist state a patent system, but we will use this term conditionally, not forgetting its content, until a more successful one is "invented."

the performance of a complete appraisal. In some cases (for example, in the FRG) the deferred system is limited at first only to the preliminary publication (revelation) of the applications, in other cases (for example, in Poland) a simplified appraisal is made according to national sources of information and a "temporary" patent is issued, while later, by additional request and after an additional payment, a complete (international) search is made and a full patent is issued. These systems truly resolve some contradictions of the traditional systems.



Single-Protection Systems of Appraisal of Inventions

[Key on following page]

Key:

- | | |
|--|---|
| 1. Applicant | 13. 1.5 years |
| 2. Preparation for patenting and so forth | 14. Up to 7 years |
| 3. Return on formal orders | 15. On special request on the basis of the possibility of use, the sale of a license and so on |
| 4. Appraisal | 16. Patents |
| 5. Publication | 17. Classical deferred (FRG) |
| 6. Correspondence | 18. National appraisal |
| 7. 2-3 years | 19. Again |
| 8. Negative responses | 20. International appraisal, on special request: a decision on the use has been made and so forth |
| 9. Authorship certificates | 21. Single-protection deferred closed (OOZ) (model) |
| 10. 1 year | |
| 11. Existing system of state appraisal of inventions (USSR) | |
| 12. Deferment on the basis of the interests of the applicant | |

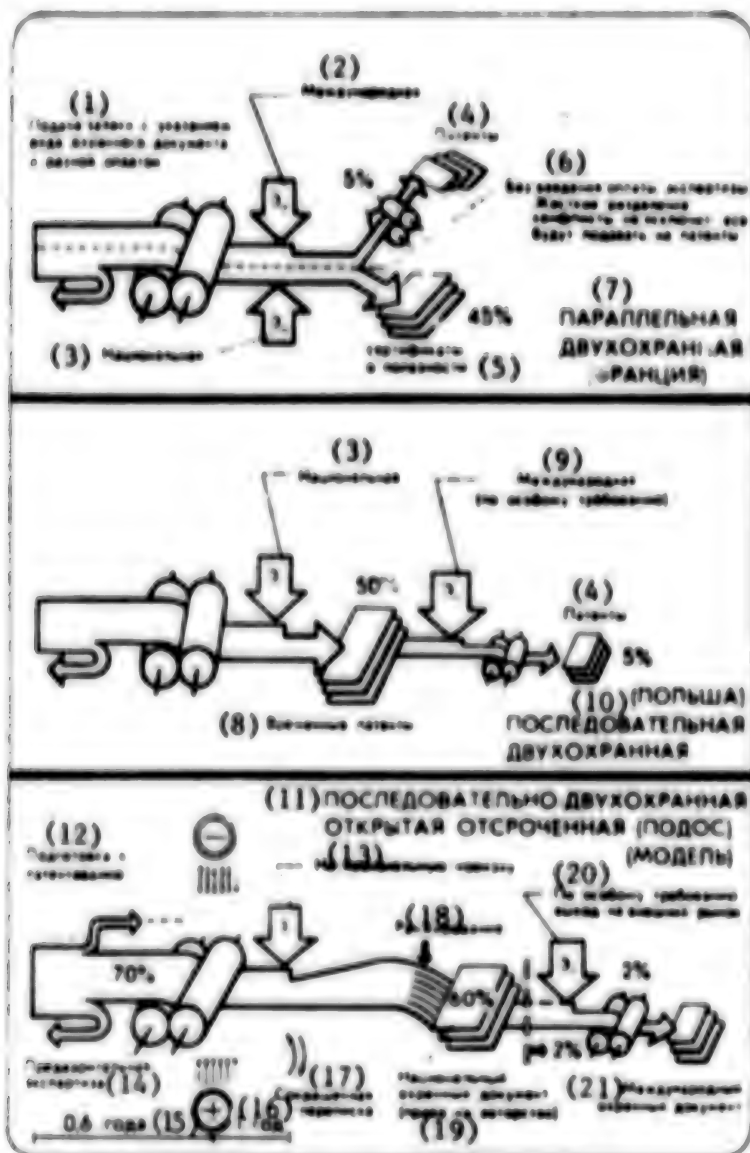
In our opinion, the sequential dual-protection open deferred system (PODOS) of appraisal is the most successful for our conditions. Its characteristic traits consist in the following.

Immediately after the filing of applications there is /publication/ [in boldface], then a wait of a year, during which third parties will be able to search and send to the commission of experts their objections to what has been claimed by the inventor or to make suggestions on its /development/ [in boldface]. Finally, an /appraisal/ [in boldface] of utility and national novelty and the issuing of an authorship certificate are carried out. The passage of applications /for the overwhelming majority of inventions/ [in boldface] concludes with this. The prepublication did its job: it established state and the author's priority and announced the essence of the proposal to all developers.

After the notice on innovations the appropriate enterprises begin to discuss the questions of their experimental testing and adoption. (How they are to be interested in adoption is a special question.) The product, in which certain inventions or others are used, appears after some time. If the objects including the inventions appear abroad (the construction of the objects abroad, the export of documents, patenting), on the request of the organization, which has assimilated the production of the objects on the level of world standards and comes out with them abroad, or if the Seal of Quality has been awarded to these objects, an additional search through the entire international file can be made, a /second protective document--for example, a type of patent/ [in boldface]--will be issued to the organization. This document can be a sound basis for the establishment of domestic license relations between enterprises, which is now regarded by some authors as an important means of improving the use of inventions in our country. Thus, the dependence: domestic utility--and local novelty, world utility--and world novelty, is established.

The proportion of the applications, for which the second stage will be carried out, is quite small: licenses are sold for only 2 percent of the inventions. A recheck, but then at a higher level, carefully and without haste, will be made for only 5-7 percent of the inventions registered at the first stage. In the case of a

favorable outcome a second protective document, let us say a "socialist patent" with an indication of the names of not only the authors, but also the /adopters/ [in boldface], will be issued.



Dual-Protection Systems of Appraisal of Inventions

Key:

1. Filing of application with an indication of the protective document and a different payment
2. International appraisal
3. National appraisal
4. Patents
5. Certificate of utility

[Key continued on following page]

Key:

- | | |
|---|--|
| 6. Without introduction of payment for appraisal. The strict division does not exclude conflicts: all will be filed for patents | 12. Preparation for patenting |
| 7. Parallel dual-protection (France) | 13. For national novelty |
| 8. Temporary patents | 14. Preliminary appraisal |
| 9. International appraisal (on special request) | 15. 0.6 year |
| 10. (Poland) Sequential dual-protection | 16. 1 year |
| 11. Sequential dual-protection open deferred (PODOS) (model) | 17. Brief correspondence |
| | 18. Ranking |
| | 19. National protective document (right of authorship) |
| | 20. On special request, appearance on the foreign market |
| | 21. International protective document |

/Prepublication before appraisal/ [in boldface] presumes the quick appearance in print of all the claimed technical solutions submitted by the authors of the annotation, including a small proportion of the uncoverable applications and applications of a special category. Technological factors limit the minimum time of publication to 4-5 months. The cost of an annotation is 5-10 rubles, and the authors should pay it. Prepublication should be made in a special Bulletin of Applications, strictly according to headings (classes). The bulletin itself can be made up in blocks so that the subscribers could order the blocks strictly according to their interests. This will save time on becoming familiar with the applications and, in spite of the increased volume of applications as compared with the number of inventions, will make it possible to reduce by several times the consumption of paper. The annotations are strictly formalized in structure, only the essence of the inventions, their basic pluses and minuses, the suggested areas of application and the data on the potential utility (ranking data) are set forth in them. All this will enable specialists to direct their attention better toward the increasing flow of information. Prepublication will shorten the time to inform the public of the country about innovations, will make the interrelations between the author and the expert open, will make it possible to check their errors better, while for many experienced inventors it will eliminate altogether the need to press too long for their claims.

The /development of inventions by third parties/ [in boldface] is a new element in world patent practice. It presumes the granting of the right to all who wish--the readers of the Bulletin of Applications--not only to criticize the proposals, but also to develop them, supplement them--in exchange for inclusion on the author list and the allocation of a fixed proportion of the compensation, for example, according to special scales.

It may be thought that the introduction of such a procedure of development will make it possible to improve those inventions which are for the present somewhat abstract and have not been brought up to the level of practical readiness. In our country, as in many other countries, there is the institution of supplementary inventions. The introduction of the right to development does not at all abolish it. But now the "supplementary" authors will be faced with a dilemma: either independent rights when drawing up the application according to the long form and many years of

correspondence with the commission of experts, or coauthorship, but then with the shortest statement of the essence of the development on 1-2 pages (which, of course, the main author might not accept).

We hope that the proposed system will increase the efficiency of appraisal: from a passive filter it will turn into an active catalyst. At the same time the engagement in invention of the creatively active population of the country, professionals and nonprofessionals, will increase. The certainty of adoption will increase and the activeness of the people engaged in it will rise. For the largest number of developments arise in the process of adoption, and the adopters will be interested in legally becoming a part of the collective of authors.

The opinion has been expressed that developments are an independent and not at all a mandatory component in the general system of patenting. It seems that the development is a most fundamental part of the PODOS. The elimination of unnecessary requirements when changing over to the mass checking of applications according to national data is quite worthy compensation to the commission of experts for the possible increase of work on inserting the materials of development in the text of the description and in the claim. Moreover, it is obvious that the materials of the authors of developments will not be a part of the prepublication annotations, and the only possible means of stimulating these authors is to relieve them of the prospect of many years of laborious correspondence with the All-Union Scientific Research Institute of State Patent Examination.

/Intermediate protection/ /in boldface/ presumes initially the issuance of an authorship certificate only on the basis of confirmed national novelty. Intermediate protection will be the first and last protection for all inventions, the use of which does not go beyond the borders of the USSR.

"National" authorship will make it possible to fill the enormous gap between the existing categories of rationalization proposals and inventions with world novelty. Let us also note that the assets being allocated by the state for the stimulation of workers of culture and art exceed the assets being allocated for rationalization and the development of inventions. The introduction of the right to receive the presently established 2 percent from the total of the saving when using inventions only with /national/ /in boldface/ novelty will make it possible to increase somewhat the material stimuli for inventors, to increase the yield of invention as a whole.

If the PODOS system is adopted by the CEMA member countries, this will make it possible to reduce the expenditures of the countries on reciprocal patenting, ensuring at the same time the closer adjoinment of the national systems of invention (the mutual development of proposals by the specialists of different countries, as well as an understanding on the start of the use of the proposals of each other and on the subsequent making of an international search and the deduction of the appropriate amounts from the impact). Perhaps this will even blaze here and there the already outlined path of the adoption of our inventions along the chain: our inventions--foreign development--the use of an invention in our country by means of the purchase of a license on concessionary terms.

Proposed System Reviewed

Novosibirsk *EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA* (EKO) in Russian No 12, Dec 80 pp 85-95

[Article by Doctor of Economic Sciences L. M. Dudkin, All-Union Scientific Research and Design Institute of Sectorial Automated Control Systems, and Candidate of Technical Sciences M. A. Shimanovich, Moscow Institute of Machine Tool and Instrument Building (Moscow): "On the Proposed System of the Recognition of Inventions"]

[Text] The established system of the recognition of inventions (which at times is inaccurately called a patent system) has a number of substantial shortcomings, and first of all the lengthy procedure and low quality of the examination of applications for an invention. One of the indicators of this is the frequency of correspondence with the inventor before a solution acceptable to both parties is found.

The lengthy procedure of examination, as well as the inadequate information content of the adopted form of publication of the descriptions and claims of inventions are leading to considerable losses of the informational value of patent materials within the State Committee for Inventions and Discoveries. The low quality of appraisal is responsible for the inadequacy of the expert estimations of the national economic value of the claimed solutions and their unconvincing nature for inventors. Facts show that the commission of experts has rejected more than one important invention, for which it was then necessary to pay in gold when purchasing foreign licenses.¹ On the other hand, the issued certificates are filled with descriptions of trifles. The unconvincing nature of decisions for inventors invariably leads to a great psychological strain in the relations between the expert and the inventor, to the withdrawal of the latter from invention.

What is the cause of the noted shortcomings?

The lack of sound criteria of the importance and inventive level makes it incumbent to spend the bulk of the time on the appraisal of minor inventions and reduces the attention to the examination of inventions with a great economic or creative potential. But the methods of such appraisals were elaborated long ago!

The decrease of the stimuli to develop significant inventions which are efficient in the future in favor of insignificant, inefficient inventions and even pseudo-inventions (which are formally incorporated in the claim of the invention) eliminates the stimulus for inventive activity in general. World experience shows that the more complicated and unexpected the solution found by the inventor is, the more difficult it is for its value to come across to the expert and the longer the delay of its recognition is. The more a new solution is ahead of the times, the fewer contemporaries who correctly understand it and the greater the impact it yields in case of its correct appraisal. Therefore it should be considered not

1. See, for example, the publications on the case of inventor Raskin of the All-Union Scientific Research Institute of the Fur Industry, when the incorrect stand of the All-Union Scientific Research Institute of State Patent Examination led to the rejection of the invention itself and to the need to purchase an expensive French license.

just a strange thing that in the patent legislation of some developed countries the conclusion of competent specialists on its impracticality is officially recognized as confirmation of the high level of an invention.

The fact that many authorship certificates are issued only after objections may create the impression that a normal discussion is taking place between inventors and experts, as a result of which the truth is revealed and conquers. In reality, in his narrow field the inventor, as a rule, is more competent than the expert, since he has engaged specially in his task. The expert, even if he is experienced, cannot devote enough attention to this task, since he often serves an entire sector. Moreover, the expert does not directly stimulate the search for solutions valuable to the national economy, while for the inventor the importance of his contribution is clearly visible in the entire chain of interrelated problems.

The State Committee for Inventions and Discoveries regards the objections of inventors to the decision of the commission of experts as an argument of the inventor with the state committee, and therefore the author often is in the position of an isolated individual arguing with a powerful organization.

The inequality of the position of the inventor in an argument with experts remains, in spite of the fact that the inventor has the opportunity to obtain a further review of the application at a meeting of the experts, in the Supervisory Council of the state committee and in the Council of Experts of the state committee. All the instances are under the permanent subordination of a single department.

The expert knows in advance to whom the application belongs--a person of merit or a novice. Moreover, enterprises that are applicants can at state expense bring in experts of the state committee to identify the attributes of inventions in the planning or design work performed by the enterprises. In this case the expert might "turn out to be" an expert from the state committee which examines corresponding applications for the latter [enterprise]. The individual inventor is deprived of such opportunities and is forced to be content with the appraisal of the patent service of his enterprise. Meanwhile, as studies show, precisely they make the overwhelming majority of genuine, "pioneering" inventions (examples are cited regularly on the pages of the journal IZOBRETATEL' I RATSIONALIZATOR).

The period of examination of an invention is usually calculated from the moment of the filing of the application with the State Committee for Inventions and Discoveries. However, a significant portion of the applications, which are filled out even not by way of the fulfillment of an official assignment, usually goes through the procedure of examination at the enterprise. This is at variance with established procedure, according to which the inventor is obligated to make an application for the invention at the enterprise prior to filing it with the State Committee for Inventions and Discoveries only if it was filled out by way of an official assignment, and if in the course of two months the enterprise does not review the application, he has the right to file it without waiting for a review at the enterprise.

The management of the enterprise is often jealous of the inventions made by its workers, while the workers are in many ways dependent on the management. The inventor is forced to present his invention, which pertains to the problems of the

enterprise, regardless of whether it was made by way of the fulfillment of an official assignment or not. For the same reasons he often is in no hurry to file an independent application even after the indicated standard period.

The introduction of the institution of enterprise applicants and of the reporting of the enterprise on its applications and the need to present the opinion of the enterprise in this case led to the procedure of reviewing the application in the council of experts or the scientific and technical council of the enterprise prior to its filing and registration with the state committee. The latter creates the conditions (which most often are realized, although not on a mass scale), under which a similar application will be able to be submitted earlier to the state committee from another enterprise, at which nothing of the like was considered earlier.

The following are indicated as the justifications of the preliminary review of the application at the enterprise and its discussion in its council of experts or scientific and technical council.

First. Review at the enterprise may help to improve the invention. But the inventor himself can also appeal for assistance to the consultants he needs and can offer them--if need be--coauthorship. Moreover, precisely to the person who can truly help in improving his idea and regardless of where the potential assistant works.

Second. The preliminary review at the enterprise rules out the possibility of the filing of the application by an imaginary inventor or one of the coauthors of the invention without the other actual coauthors. But if we compare the number of extremely rare, literally isolated cases, which occurred previously, of the plagiarism of inventions and the improper behavior of coauthors with the adverse consequences of the shortcomings of the preliminary discussion of the application at the enterprise, it will become obvious that this system has not justified itself. Moreover, the practice of discussing applications at the enterprise shows an extremely tolerant attitude toward imaginary coauthors at the enterprise and, what is more, such a review forces the author to include among the coauthors a large number of people who are obviously incompetent in the corresponding problem, but on whom the author depends with respect to his official position.

Finally, it is impossible not to note the low level of skill of the workers of the patent service, especially at production enterprises, where the patent subdivisions are often manned by inadequately trained personnel who have often simply been released from other sections because of low skill.

The Statute on Discoveries, Inventions and Rationalization Proposals of 21 August 1973, unfortunately, has not solved any of the described problems. For illustration it is enough to examine the development of the demands on the materials of the author's applicant. For the benefit of the matter one thing is required of them--a clear statement of the reasons and the essence of the inventor's proposal, which is distinct with respect to the specified form and content. Whereas previously only an application and a description with drawings were required, now four more documents are needed: 1) the conclusion on the novelty and utility; 2) a report on the study of the claimed invention according to patent, scientific and technical literature; 3) a report on creative collaboration; 4) an annotation. And

although the latter pertain to official applications, it is no secret that in the majority of instances owing to the lack or weakness of the corresponding subdivisions the inventors themselves have to prepare all the indicated documents, and merely formally.

In the 1973 statute as compared with the 1959 statute there is no right of inventors to the preferential holding (other things being equal) of the position of scientists at the corresponding scientific research institutions and at pilot enterprises. This right was withdrawn without a word, without any public statement of the reasons even in special literature both before and after the adoption of the statute. To whom and to what was this withdrawal of use? It more likely promoted the separation of science from practice and complicated their convergence. It was of use to those who calmly feign scientific activity, by holding scientific positions, and actively block the influx of productive forces into science.

A new reform of the system of the recognition and adoption of inventions is needed, this reform should be the result of extensive discussion and should create a mechanism for the continuous improvement of the system of inventions.

What problems does the PODOS system of B. A. Minin solve?

/The first thing that this system presumes is preliminary publication/ [in boldface]. Strictly speaking, in many countries they have already changed over to the publication of all the applications received for examination, which makes it possible to eliminate as much as possible the errors when selecting useful solutions and to eliminate the distortion of the information being received. The application in the rendering of the author of the invention becomes accessible to all and everything efficient in it can no longer be buried in the archives, even if it is premature. Sooner or later it will be noticed. Preliminary publication removes the excess tension from the applicant and the expert, makes objective evaluations and the check of them possible and preserves the information, although given the procedure adopted abroad this is not shortening its path to the consumer, since in the interests of the patent holders the applications are published 1.5 years after filing. Preliminary publication reduces the cost of appraisal, shortens it and makes it more objective and under control. Therefore the proposal to introduce preliminary publication in our country has long been ripe. For a long time now we have been losing a lot because there has been no such publication. Moreover, we consider it necessary to publish all 2 million rejected applications. The present level of the means of publishing makes all references to technical or economic difficulties superficial. Only one conclusion--our low organizational level--is serious.

/The second element of the PODOS system--the introduction of developments of the primary applications by third parties/ [in boldface]--is new in theory and practice. This should make it possible to involve the maximum number of creative forces of the country in socially useful activity. The effective yield will be dual--for the proposals which will be developed and for the people involved in this development. It can easily be imagined that in case of the introduction of development the Bulletin of Applications will become a reference book in many families, millions of people will feel needed and familiar with the development of inventions. For the present only several hundred thousand people are involved with it.

/The third element of the PODOS--limitation to national novelty/ [in boldface]-- stems from the usual contradiction between the extent of efforts on checking the novelty and the extent of the results from the use of inventions. As is known, some countries (Poland, France) have resolved these contradictions, having introduced intermediate national checking with the issuing of a temporary patent, and thus have reduced appreciably the load on appraisal and have facilitated the procedure of recognition. The proposal of B. A. Minin is: after national appraisal it is not a temporary authorship certificate (temporary authorship is meaningless) that is issued, but a certificate with a national scale of novelty (for the USSR). Judging from the accumulated statistics and on the basis of the proportion of foreign patenting of our inventions, the appraisal of nearly 98 percent of the inventions ends with this--a great facilitation of the work of experts. The second phase--the check for international novelty--is actually necessary only for a small proportion of the inventions and for the applications which are checked by our country in accordance with international obligations. The bases for domestic license relations are introduced by this phase. Only the enterprise, which has proven the high quality realization of an invention at a level not lower than world standards, can be given the right to disseminate its know-how within the country and, accordingly, for a payment by others for this know-how (the fee for technical specifications). It is impossible, of course, to grant the rights to domestic licensing to the enterprises at which the author of the invention was a staff member: they should earn them by their direct duty--excellent development.

When filing applications within the PODOS the need for the number of documents, which the author now has to submit when filing applications on behalf of organizations, and not on his own behalf, can be eliminated. Moreover, of the three types of filing of applications: directly from the authors, from the authors through the organization and from the organization, the first one will be quite adequate, while each organization should earn the right to its own certificate by the independent high quality development of the proposal, and not at all for the fact that for certain reasons or others the inventor was on its staff.

The fact that for confirmation of the stage of development and its results the author has to ask for a report from the organization, is another matter. Here a certain dependence on the organization will remain.

When filing an application it will be possible to simplify to the utmost and even wherever possible to formalize the procedure of drawing up the materials. Further, in the process of waiting for a year (after preliminary publication) everyone, of course, will be allowed to carry out development. And the question of participation here is a question of the initiative and skill of the author-developers, and not of chance proximity at work. Finally, the lack of attachment of the first authorship certificate to a specific organization relieves it of the obligation to introduce "its own" invention regardless of whether or not it yields a national economic or if only a local impact. On the other hand, at present the work of the organization after receiving "its own" certificate then subsides for a long time. According to the proposed patent system there will be no reasons for complacency. The organization, if it wants to receive a certificate, will truly have to engage in what it should engage in: the adoption of the proposal.

If the problem is not far-fetched and is properly stated by the inventor, preliminary publication can play the role of a seed crystal in a saturated solution: the crystal in it will grow like a snowball. Even if the inventor after properly wording the problem made the first step not entirely in the correct direction, his colleagues will set him right (of course, those who wish to make their own application should have the right to do this--the PODOS provides for this).

Incidentally, here it is also possible to point out the main opponents of development: those who will immediately be outside it, who will be deprived in this case of the benefits of exaggerated coauthorship.

Thus, the system proposed by B. A. Minin makes it possible to transform appraisal from a passive procedure of filtering the finds of inventors into an active element of the continuation of their development--a possibility not yet put into practice anywhere. Moreover, it introduces a meaningful basis for the establishment of domestic licensing--the existence of a second protective document which certifies the quality of the use of inventions--a basis which is much more solid and deserved than the existence of an authorship certificate which only certifies the authorship. This will create the material basis for the extensive involvement of high-class specialists and inventors in development. It is obvious that the introduction of a system like the PODOS will increase appreciably the work of the Committee for Inventions and Discoveries. But society as a whole will stand to gain from this.

Additional Suggestions

It makes sense, in our opinion, to supplement the PODOS with other measures on changing the procedure of preparing and reviewing inventions.

First. Abolish the procedure in case of which applications are reviewed at the enterprise prior to their registration with the state committee.

Second. Eliminate, at least temporarily (until the improvement of the moral climate surrounding real inventions), the institution of enterprise applicants.

Third. Introduce a system of the anonymous (by number) review of applications and filing under an emblem or pseudonym (up to publication under the pseudonym) with the right (but not the obligation) of the author to reveal his name only after a decision on issuing an authorship certificate has been made. The effectiveness of this measure can be guaranteed by the criminal punishment of any persons who divulge the emblem or pseudonym.

But will not the obligation to file applications under an emblem or pseudonym promote the arrogation of the inventions of others? The latter might be possible, if measures for the objective investigation of the corresponding facts are not provided for. The right of any inventor, who suspects a case of arrogation, to appeal to investigating organs and the duty of the latter to hold within the period set precisely by the law a closed (in order not to infringe upon the emblem) inquiry may be such measures. For the proper handling by nonspecialists of patent claims their compilation should be radically improved, having revealed their essence to the utmost.

Fourth. Introduce a procedure, when instead of correspondence with the statement of categorical decisions a normal discussion on the application is initially conducted between the expert of the All-Union Scientific Research Institute of State Patent Examination and the author. In case of doubts about the validity of the claims of the author to the application, the expert is obliged at first to send to the author the questions and doubts which have arisen for him. In turn the author is obliged to send to the expert the appropriate answers and explanations. By mutual agreement an oral discussion can also be held between the expert, on the one hand, and the representative of the author or the author himself, on the other. In the latter case the expert is criminally liable in case of the infringement of the emblem (or divulgence of the pseudonym).

Fifth. There is being introduced a state system of the mandatory registration of:
opinions issued by experts and reviewers;
cases of the refusal to issue an opinion;

cases of the unjustified adverse assessment by the expert of the applications of authors.² The case of an unjustified adverse assessment is entered in the appropriate register on the basis of the materials submitted by the inventors, after which it is published. In this case the authority of the expert and even the organization are influenced not only by what they have created, but also by what they supported or hampered by the force of their authority, and even by that about which they refused to express their opinion.

Sixth. Councils of the Union of Inventors (proposed by Candidate of Economic Sciences O. M. Yun')³ according to the main directions of technical creativity are being set up as an additional organ for the examination of applications, and there should be several (not less than two) councils for each direction. The composition of the councils is established from two to three years from among inventors who have the largest number of inventions, which were made independently or with not more than one coauthor over the past seven to eight years, and have published the largest number of printed works on the same direction, which once again were carried out independently or with not more than one coauthor.

If the All-Union Scientific Research Institute of State Patent Examination submitted an adverse decision, it is sent beforehand to the author, who has the right, as under current procedure, to send to the All-Union Scientific Research Institute of State Patent Examination objections to the decision of the commission of experts. If after the second and third objections the All-Union Scientific Research Institute of State Patent Examination does not agree with the author, the question is submitted to a council. In this case all the correspondence of the author with the All-Union Scientific Research Institute of State Patent Examination, including the

2. The idea of introducing the registration of adverse opinions was expressed by Leningrad inventor I. G. Lipov. He proposes to attach a list of the unjustified adverse opinions to the personal dossier of the expert (as a list of scientific works is attached to the personal dossier of the research associate).

3. See EKO, No 4, 1976, p 102.

final decision of the All-Union Scientific Research Institute of State Patent Examination (on the third objection of the author) and the objection of the author to this decision, is attached to the application. The expert of the All-Union Scientific Research Institute of State Patent Examination and the author (or his representative) can take part in the meeting of the council with the right of a deliberative voice.

The conclusion of the Council of Inventors (if it differs from the opinion of the commission of experts of the All-Union Scientific Research Institute of State Patent Examination) is sent to the Supervisory Council of the State Committee for Inventions and Discoveries. The decision of the Supervisory Council of the State Committee for Inventions and Discoveries is sent to the author and to the Council of Inventors. If the author and the Council of Inventors do not agree with the opinion of the Supervisory Council, they can report their objections to the latter. If the opinion of the Supervisory Council remains unchanged and the opinions of the parties thus differ, the Council of Inventors can file action in the patent court against the decisions of the Supervisory Council. Since the opinion of the Council of Inventors is the opinion of a collective organization, it will have greater weight in court in an argument with the State Committee for Inventions and Discoveries than the voice of an individual author.

At the same time the disagreement of the author with the decision of the Council of Inventors is also possible in principle. In this case the author has the right to appeal to another Council of Inventors, and in the case of disagreement with the decision of this council as well can appeal to the court independently.

The elimination of the procedure of the preliminary review of applications for inventions, which were made by way of an official assignment, the abolition of the institution of applicants and the introduction upon request of an emblem, along with the release of patent services from subordination to enterprises, automatically eliminate the described shortcomings of the examination of applications at the enterprise, without leading to any other significant complications whatsoever. The administration of the enterprise not only loses its functions on monitoring, but also cannot, due to the strict emblem and independence of the patent service, impose its proposals and coauthorship on the inventor. Under the currently established procedure the enterprise is obligated to assist the inventor in the preparation of the application; this function is now being performed in practice only by the patent services, and under the new procedure it will automatically be transferred to the jurisdiction of patent services which are independent of the enterprise.

Inventor's View

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/Article by lathe operator and gauge maker B. F. Danilov (Moscow): "From the Point of View of an Inventor"

/Text/ The aspiration to improve our patent system and the work of the All-Union Scientific Research Institute of State Patent Examination is alive in every inventor. I have not met a single inventor who is satisfied with the existing system of

the official registration of an application, the work of the commission of experts, the many years of correspondence of the authors and the experts and many other factors connected with the activity of inventors. The delay of the publication of patent data and an appraisal which often lasts more than a year are intolerable. A protracted appraisal is harmful and wasteful.

B. A. Minin states that only 2 percent of the inventions go abroad, while the remainder are used within the country. Hence, only these 2 percent should undergo a strict appraisal for world novelty, while the remaining 98 percent should undergo a quicker appraisal for national novelty. If this procedure is legalized, thousands of inventions in our country could be put into use a year or two earlier than now happens. This would provide the national economy with an enormous impact. Of course, the expert engaged in the preliminary selection of applications should be very experienced and should have a broad outlook, so as to select these 2 percent more or less correctly.

The quality of patent information is unsatisfactory. In my field I have not had occasion to come across a description of an author's solution, in accordance with which it would be possible to produce the invented tool. If it attracted interest, protracted correspondence of many months begins: a search for the address of the author, the plant or the institute at which he works, the establishment of contacts with the management of the plant, requests for sketches to be sent, the visit of the author himself and so on. But is it impossible, having increased the size of the Bulletin of Applications, to give in it clear and precise material? For as yet searches and correspondence are undertaken, frequently the need for a given innovation disappears (the character of the work changes, other means of solving the problem are found, even though they are expensive, yet they are "one's own," for which it is not necessary to go somewhere or to use up heaps of paper for their sake). My inventions concern new types of tools. And guided by their descriptions alone, I could not myself make the innovation according to them, although I am their author: so in them everything is approximate and sketchy.

The preliminary publication of the material, which is called for by the PODOS system, would be useful. In many instances the very fact that interest is displayed in preliminary publication on the part of an enterprise or institute would be an answer to the question, should the expert in general waste time on this proposed invention, that is, is it necessary at all? And if it is necessary, the author will be able in conformity with requirements to develop his own innovation, perhaps to fit the demands of the specific works. Moreover, the PODOS system will shorten considerably the time for appraisal. As to the system of the development of an invention by other parties, I would oppose it. I have no doubts that the majority of inventors would take badly interference in the fate of their creation, which they have not agreed upon. Incidentally, not a single inventor I am acquainted with knows about the "institution of supplementary inventions." I also do not know about it. In my opinion, in accordance with existing concepts each invention can be considered supplementary, since it is not a discovery. At present appraisal is so strict and refined that in most instances it requires for the recognition of an innovation as an invention all but a discovery.

B. A. Minin also raises the very important question of improving the interrelations between the expert and the inventor. I have gotten the impression that the expert

has grown accustomed to considering the inventor his potential opponent, all of whose opinions he should destroy by any means. One has to defend and prove not only the utility, originality and need of an innovation, but also to parry the casuistic subterfuges in the verbal attacks of the expert. Not all inventors have the qualities necessary for this. Hence it is clear that the struggle of the expert against the inventor looks like a tiger playing with a lamb.

The very atmosphere at the All-Union Scientific Research Institute of State Patent Examination is such that one would like to hang at the entrance the poster: "Give up hope, all who enter here." Let us begin with the fact that house telephones, over which each visitor can announce his arrival to the necessary person and the latter will come out to him or will order a pass, hang in all Soviet institutions, plants and ministries. Here it is not so. All the telephones are city public telephones. The visitors rush about the vestibule, trying to get two-kopeck coins from each other. The meeting, for the most part, takes place here, in the crush of the waiting room. It is felt that the inventor is a persona non grata here.

About 10 years ago the experts greeted the inventor as follows: "We will refuse you at once," the expert said, "but you fight for your application, show us, and we will listen." Now, even at the preliminary appraisal, they do not invite the inventor to "fight," but having listened attentively to him, say simply and politely: "Your idea is very valuable and necessary, but you would be better off filing a rationalization proposal for it, and do not disturb us with your claims for an invention."

After this it is useless to argue or to try to prove anything, the opinion is final and is not subject to appeal.

The assessment of proposals by experts often causes bewilderment. Some applications, from the point of view of the specialists, are not worth a wooden nickel, yet authorship certificates are issued for them. Thus, for example (I am taking the field I am acquainted with), many certificates have been issued for the faces of the cutting tip of a cutting tool, for the form of the sharpening of the same cutting tool, for the form of the fastening of the tip and so on. Other, complex developments of a fundamentally new tool were categorically rejected.

For example, an authorship certificate was issued to me for a thread chaser for the cutting of a thread, on which I made a measuring platform for the internal diameter. And I was refused point-blank an authorship certificate for the development of a new complicated measuring tool which is needed in the electronics industry. The expert admitted that such a tool does not exist anywhere, but it "is not suited" for an authorship certificate.

Due to extremely strict appraisal and the whim of the expert it is just as difficult for the inventor-worker to obtain an authorship certificate as it is for the Biblical camel to get through the eye of a needle. In one of my documentary art books, which has gone through several editions, one chapter is simply called "Through the Eye of a Needle." Not without reason have not only I in recent times stopped fighting the experts and become a journalist. And this is after I had still "wrested" five authorship certificates.

Writing books is hard work, but it is easier than actions against experts. It seems to me that fundamental changes must be achieved in the relations between the inventor and the expert. It is no secret to anyone that the situation, when the inventor is a head taller than the expert, is becoming a mass one. But he should genuflect before him as a matchless authority.

It is necessary to have at the All-Union Scientific Research Institute of State Patent Examination a more skilled staff of experts, to enlist in some way in this work inventors of merit, who know not only legal documents, but also a specific industry. It must be done in such a way that in the attitude of the expert toward the inventor, as well as toward the workers of plant patent bureaus an atmosphere of trust would prevail, and not distrust, suspicion, or else outright hostility, which now is frequently observed.

It is no secret that in the American, Japanese and other foreign patent systems the demands for the issuing of a patent are considerably weaker than in our country. Perhaps some will reply to me: in our country tens of thousands of inventors receive recognition, authorship certificates are issued to them. This is not an argument. Incidentally, in the United States patents with seven-digit numbers have been issued for many years now, while in our country six-digit numbers will be attached to authorship certificates until the 21st century. This is abnormal and insulting. The improvement of our patent system could promote in many ways an increase of the creative activity of workers and engineers.

Economic Problems

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[Article by Honored Scientist of the RSFSR, Doctor of Economic Sciences Professor S. A. Sarkisyan, Candidate of Economic Sciences G. M. Derkach and Candidate of Economic Sciences Yu. P. Konov (Moscow): "Economic Problems of the Reorganization of the Soviet Patent System"]

[Text] The discussion of the reorganization of the Soviet patent system is urgent and timely, while the questions and suggestions submitted to discussion by B. A. Minin are important economic, technical and legal problems of Soviet patenting.

Let us examine several of these problem.

/The duration of appraisal/ [in boldface]. In conformity with the Statute on Discoveries, Inventions and Rationalization Proposals, which was approved by the USSR Council of Ministers on 21 August 1973, state scientific and technical appraisal takes place over a period of six months to one year from the day of receipt of the application by the USSR State Committee for Inventions and Discoveries. In actual fact the correspondence with the applicants, according to the data of B. A. Minin, lengthens this period to two to three years. The most valuable information remains sealed for general use for this entire period plus the time between the making of a decision on the issuing of an authorship certificate and the notification on the invention in the official bulletin of the USSR State Committee for Inventions and Discoveries. The problem of a "lag of efficiency" of the information on inventions

arises. Therefore the introduction of the preliminary publication of applications for inventions even before the performance of the scientific and technical appraisal is extremely desirable. This will eliminate or, at any rate, reduce the numerous instances of expenditures on research and development, which have already been performed by others and were reflected in the materials of the applications for inventions. Moreover, under the conditions of the extensive development of operations on the forecasting of scientific and technical progress it is difficult to overestimate the importance of the accelerated involvement in the process of analysis of the materials of the applications for inventions, since precisely this collection of information along with the collection of descriptions for patents and authorship certificates of the USSR will make it possible to use most effectively the methods of forecasting on the basis of patent information and to increase the accuracy and reliability of the forecasts.

/Is the now prevailing strict appraisal for world novelty necessary/ [in boldface], if 98 percent of the inventions in our country never go beyond the national borders, while within the country our authorship certificate does not hamper or help anyone?

It is here that I cannot agree with B. A. Minin. Strict appraisal is vitally necessary! A changeover to intermediate protection on the basis only of national novelty in the USSR would be a step backward in the reorganization of the Soviet patent system. Why? Because right now in our country the conditions are objectively forming, when the changeover to a statewide system of the control of the level of technology, the leading role in which should belong to the USSR State Committee for Inventions and Discoveries--just as, for example, it belongs to the USSR State Committee for Standards in the statewide system of quality control--is becoming really possible.

The changeover to the PODOS system of appraisal will make it possible, in the opinion of B. A. Minin, to gain on the average per application during the performance of the appraisal approximately 2.5 years, to reduce considerably the expenditures of the All-Union Scientific Research Institute of State Patent Examination, taking into account that the state spends 50 rubles on each examined application, while the appraisal of an application, for which an authorship certificate is issued, costs it 300 rubles. This is fine. But there is also another aspect of the question.

With the introduction of the PODOS it will probably not be made the duty of the developer to make technical patent studies according to the world patent file for the majority of coverable themes. The USSR State Committee for Inventions and Discoveries, in accordance with the existing system of planning of the use of inventions, mainly will recommend for adoption scientific achievements which have not less than national novelty. In other words, the worsening of the technical and economic indicators of domestic technology as a whole and of its quality is possible, which in the end may result in considerable economic losses which are much greater than the direct economic impact from the introduction of the PODOS system.

/One more question/ [in boldface]: why such an expensive appraisal, when approximately the same amount is spent on carrying it out as is paid for remuneration of the author? B. A. Minin somewhat oversimplifies the question of the role of the level of expenditures on appraisal in the process of protecting the priority of the

scientific achievements of the USSR, by comparing the impact (the remuneration of the author) with the expenditures on appraisal. It is necessary to compare with these expenditures not the amount of the royalties, but the economic impact from the use of inventions in the USSR national economy. It should also be borne in mind that, for example, in the development of large technical systems, such as aviation or space rocket technology, the proportion of inventions creating a saving is negligible, while the scientific and technical and the sociopolitical impacts from the use of such inventions are enormous. Therefore the level of the expenditures on appraisal is probably justified. The task consists in increasing its effectiveness.

/Why such refined appraisal/[In boldface], when it controls neither the entire "cost" of the invention nor the economic boundaries, but only the authorship and the distribution of the reward? A refined patent appraisal is necessary, but it must be improved, particularly in the determination of such attributes of the coverability of a technical solution as the essential positive impact and the utility. It is probably necessary to rearrange the organization of the system of the use of inventions with the priority of the most effective technical decisions.

/Do we need a patent system at all?/[In boldface] It is necessary and, as the practice of patent keeping has shown, requires constant improvement and the increase of its efficiency. Under the conditions of the existence of the mighty patent systems of the developed capitalist countries the USSR should have just as mighty a Soviet patent system. In particular, without looking into the question of the establishment of domestic license relations among the enterprises of our country, it is possible to note the need for the considerable improvement of the patent and license operations of the USSR with foreign countries.

The USSR, which is among the first five countries of the world in the number of applications filed annually for national inventions, has the opportunity to direct its attention more extensively toward the sale of domestic scientific achievements abroad, the sale of patents, licenses and "know-how." It is well known that in the United States the receipts from the export of patents and licenses annually come to about \$3.5 billion, which is equivalent given a rate of return of 10 percent to the additional annual export of goods from this country worth about \$35 billion.

In our opinion, the negligibility of the amount of remuneration as compared with the impact of an invention in instances when it is more than 1 million rubles is now one of the shortcomings in the stimulation of the authors of inventions. When reorganizing the Soviet patent system particular attention should also be devoted to the development of a system of the stimulation of the collectives of the enterprises which are the first to have adopted an invention. It is probably necessary to assign to these enterprises a portion of the profit obtained by the other enterprises using these inventions.

Thus, it is possible to say the following about the proposals of B. A. Minin. The need to introduce a new, more efficient system of the appraisal of inventions in the USSR with the preliminary publication of the materials of the applications does not arouse doubts. The development of inventions by third parties, at the same time as the existence of the institution of supplementary inventions, requires experimental verification. In our opinion, the introduction of the intermediate protection of all inventions used only in the USSR with respect to national novelty was not proven convincingly.

Adoption of Inventions

Novosibirsk *EKONOMIKA I ORGANIZATSIYA PROMYSLENNOGO PROIZVODSTVA* (EKO) in Russian No 12, Dec 80 pp 103-106

[Article by Candidate of Economic Sciences S. I. Simanovskiy, Institute of Economics of the World Socialist System of the USSR Academy of Sciences (Moscow): "Adoption is the Main Criterion of the Efficiency of the System of Appraisal of Inventions"]

[Text] The development of inventions, the patent business and licensing work are interrelated components of the unified state scientific and technical policy, which is aimed at providing socialist production with the most advanced technical solutions which promote an increase of the productivity of national labor and the efficiency of the national economy. Therefore the problem of improving the system of appraisal of inventions should be examined from a broad national economic point of view, in the interconnection of the links "development--identification--adoption of inventions," and not as B. A. Minin does—from the position of the narrow departmental interests of the State Committee for Inventions and Discoveries in the person of the All-Union Scientific Research Institute of State Patent Examination. Hence the aspiration to eliminate with the minimum costs the growing "avalanche" of applications and to reduce the workload of experts.

Like any system of registration, the system of appraisal of inventions serves the goals of the accumulation of a specific collection of information. It should be admitted that the formation of the scientific and technical stockpile of inventions is carried out in our country at times spontaneously, without the proper consideration of the current and long-range goals of scientific, technical and economic policy, the need to focus the thought of inventors on the solution of vital problems of scientific and technical progress. The urgent nature of these tasks predetermines the need to shift the center of gravity in our inventional activity from the extensive /accumulation/ [in boldface] of a scientific and technical stockpile to its intensive /assimilation/ [in boldface] in production.

Before deciding to change radically the existing system of appraisal and to introduce a new one, it is necessary to ascertain whether such a replacement would be premature, whether the positive means incorporated in the existing system have been utilized fully enough; have all the available potentials of increasing its efficiency been discovered; are the difficulties which have arisen the result of defects in the organizational mechanism of the management of the existing system?

If the new system in the end does not result in the shortening of the period and the broadening of the scale of the adoption of inventions, does it make any sense at all to introduce it? Is it not better at this stage to aim the joint efforts of the State Committee for Inventions and Discoveries, enterprises, scientific research institutions and public organizations (the All-Union Society of Inventors and Rationalizers, the All-Union Council of Scientific and Technical Societies and so forth) at the qualitative improvement of the mechanism of the existing system, including its organizational, legal and economic elements?

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In the United States, where the patent system is quite efficient, a certain crisis in it has also appeared. But it is being overcome not along the lines of the replacement of the established system of the appraisal of inventions, but by means of the search for and utilization of the potentials existing in it for the purpose of intensifying the process of adopting inventions. For this the Office of Technology Assessment was established within the U.S. Congress; the (Council for Patent Policy) and the (Interdepartmental Committee for the Analysis of Problems of the Development and Adoption of Inventions) have been formed in the White House. Obviously, it would be useful to study what new things these bodies, which were created at such a high governmental level, have contributed to patent affairs.

There are also reserves for improving the existing system of the appraisal of inventions in our country. Of the colossal flow of applications, which is creating an unjustified work strain on the All-Union Scientific Research Institute of State Patent Examination, a significant portion is made up of "hollow objects" which are rejected due to the lack of novelty. In our opinion, an entire system of measures is necessary for reducing their flow and improving the entire process of adopting inventions. Among them are:

the forecasting of the trends of development of each specific field of technology at the stage of the planning of scientific research and design work on the basis of patent information with the maximum utilization of territorial and sectorial files of patent documents;

the strengthening of the patent services of enterprises and organizations with skilled personnel who have undergone special training along the lines of the education institutions of the system of the State Committee for Inventions and Discoveries;

the enlargement of the network of branches of the All-Union Center of Patent Services (VTsPU) in the union republics, economic regions and large cities; the organization of their activity so that the developers would not come to the VTsPU to draw up the application, but the experts of the VTsPU would visit enterprises and organizations upon their request, would acquaint themselves locally with the state of the developments, would make a preliminary search for novelty (once again in cooperation with the territorial and sectorial patent files) and in accordance with the results of their observations and study would draw up an application for the corresponding invention with the greater likelihood of the receipt of a protective document.

It is possible to envisage a situation in which the developers before filing an application would defend its novelty and utility (with an analysis of the known level of technology) before a qualified council of specialists (plant, regional, city), which is made up of competent staff members of the given or a related enterprise, representatives of the organizations of the All-Union Society of Inventors and Rationalizers, the VTsPU, the sectorial scientific research institute and so on. The council would have the power to make a decision on the expediency of filing an application with the All-Union Scientific Research Institute of State Patent Examination.

Moreover, perhaps, the conditions are already ripe for the filing of applications by enterprises and organizations to be accompanied by the payment of the appropriate fee to the USSR State Committee for Inventions and Discoveries (a precedent already exists: payment for the services of the VTsPU). This would also force enterprises to approach more strictly and responsibly the filing of applications for inventions, to filter out more carefully inefficient and technical unpromising solutions, not to chase the "gross" of applications in pursuit of the quantitative indicators of creative activity. On the other hand, this would make it possible, at least in part, to convert the activity of the All-Union Scientific Research Institute of State Patent Examination to cost accounting, to seek additional assets for the stimulation of the labor of experts, the increase of their skills and the streamlining of their information and technical support. The funds for the development of invention and rationalization, which are available at enterprises and organizations, could be used as the source of assets for the payment of such fees. Of course, the system of imposing a fee on applications would not be applied to individual inventors (private individuals).

Here some might immediately object that in such a case all organizations would strive to file applications from the inventors as individuals. I believe that this would not happen for the following reasons.

As is known, more than 80 percent of the applications are filed by enterprises and organizations not for the sake of obtaining protective documents, but for the adoption of these technical solutions at the given enterprise (if only to receive the appropriate remuneration). The existing mechanism of the adoption of inventions is such that otherwise the inventors can ensure the adoption of their inventions at enterprises with difficulty, but if these inventions are adopted on the initiative of enterprises, it is difficult for the inventors to monitor this process and to succeed in receiving documents on the adoption of their inventions, to say nothing about the payment of the appropriate remuneration.

In this connection the proposal on abolishing the institution of applicants (enterprises) is unrealistic, even naive to a certain extent, since it entails the elimination even of the minimum interest of enterprises in adoption, which exists at present, to say nothing about the fact that it might disorganize the process of the adoption of inventions. Who will adopt the inventions of "others," if even "his own" are adopted with difficulty?

The evaluation of the accumulated stockpile of unused inventions from the point of view of their promise and potential effectiveness for the national economy and of the selection of the most valuable inventions for adoption in production during the present and future periods requires improvement. This work should be performed at the same time as the analysis of world trends of the development of science and technology on the basis of patent information, which will make it possible to influence purposefully the activity of inventors in the country and to make the necessary adjustments in the long-range planning of scientific research and design work.

The State Committee for Inventions and Discoveries and its scientific subdivisions (the Central Scientific Research Institute of Patent Information, the All-Union Scientific Research Institute of State Patent Examination, the Central Institute of Patent Sciences), which in cooperation with sectorial institutes, ministries, the

USSR State Committee for Science and Technology and USSR Gosplan should prepare the basic material for making decisions on the development of the national economy on the basis of advanced achievements of world scientific and technical progress, is called upon to head this work.

From the editorial board. Attaching great importance to the increase of the effectiveness of the work of inventors, the editorial board requests that the USSR State Committee for Science and Technology and the USSR State Committee for Inventions and Discoveries express their point of view on the essence of the questions touched upon in the materials published above. The concerned discussion of these problems with the participation of the readers of EKO and responsible workers of competent state organs will make it possible to reveal and put to use new reserves for expediting scientific and technical progress in our country.

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REGIONAL DEVELOPMENT

BSSR GOSPLAN CHIEF ON IMPROVEMENTS IN REPUBLIC'S ECONOMIC MANAGEMENT

Moscow EKONOMICHESKAYA GAZETA in Russian No 1, Jan 81 p 6

[Article by V. Gvozdev, chairman of the Belorussian SSR Gosplan: "Using Accumulated Potential"]

[Text] The working people of Belorussia have been deeply affected by the greetings of Comrade Leonid Il'ich Brezhnev, who congratulated the Belorussian people on a great labor victory: in terms of rate of growth they have brought the total volume of industrial production up to the level specified by the Basic Directions in the Development of the National Economy for the Years 1976-1980, and they have done it ahead of schedule. They have produced the following amounts in excess of the five-year plan targets: 1.3 million tons of mineral fertilizers; 9,800 tractors; 2,300 trucks and 160 million rubles worth of instruments and automatic equipment. More than 300 million rubles worth of consumer goods above the targeted amounts will be produced.

As a result of the improved material and technical basis of agriculture and of the broader use of the achievements of science and successful experience, the average annual volume of gross production in the kolkhoz's and sovkhoz's of the republic increased 16.6 percent in comparison with the previous five-year plan. The average annual grain production increased 12 percent; meat production increased by 22 percent and milk by 19 percent. During the five-year period the population obtained about 21 million square meters of living space. In other words, every fifth resident of the republic improved his housing conditions. A number of cultural and recreational facilities were opened.

At the present time the working people of the republic are focusing their attention on a very important political document--the plan of the CC CPSU for the 26th party congress. Developed in accordance with the Leninist general policy of the CPSU, the Central Committee's plan represents a comprehensive, scientifically-based program for an important new stage in the creation of the material-technical basis of communism, in the perfection of social relations, in the formation of the new man and the development of the socialist way of life. Every one of its provisions is aimed at ensuring further improvement in the welfare of the people, as well as the growth of the economic and defense might of the Soviet Fatherland.

The Belorussian SSR will make a weighty contribution to this too. The volume of industrial production will increase by 26-29 percent. The plans call for further strengthening of the material and technical basis of agriculture as well as the degree of cooperation and specialization in it; the production of plant and animal food products will be increased as a result.

The draft of the Basic Directions sets as a goal the implementation of a set of measures to improve the economic mechanism in the Eleventh Five-Year Plan and to increase its effect on the work to improve effectiveness and quality. Our republic is accomplishing a great deal toward this end. Measures are being carried out to further improve management in various sectors of the economy, to improve building production and to carry out the transition to the two- and three-unit system of management.

It is specified that in the first year of the Eleventh Five-Year Plan work will begin on the fulfillment of 58 republic-level scientific-technical and economic programs as well as six special purpose comprehensive scientific-technical programs which call for the realization of a system of measures to improve the quality of production, work and services, to reduce the use of manual labor in industry and construction and to reduce losses in agricultural production, etc.

At the same time it should be noted that, in our view, this work should be carried out more actively at all levels--from enterprises and associations to union ministries and agencies.

It cannot, for example, be considered satisfactory that up to the present time no deadlines have been set for the transition by union and union-republic ministries and agencies to the normative method of planning wages or that deadlines have not been set for the transition to this indicator by the republic ministries and agencies. The same situation exists with regard to the use of the normative method of profit distribution. In our republic all industrial union-republic ministries and agencies have operated for a number of years under the system of self-financing, and they are almost prepared for the normative method of profit distribution to be used in planning. However, the appropriate union ministries are not manifesting the necessary initiative on this issue.

Or another issue. The republic's associations and enterprises have finished compiling passports containing data which are used in practical work. For more complete accounting and better use of technical-economic indicators in planning for entire industries it would be wise to compile passports for these industries on the basis of the data from the passports of associations and enterprises. In our view, this should be taken into account in the new five-year plan.

I would like to make the following proposal. In connection with the union-wide comprehensive program for the development of mechanization and automation of lifting-transporting, loading-unloading and warehouse work in the years 1981-1985, a single all-union center should be entrusted with the implementation of a single technical policy in this area, while the design and production of lifting-transporting equipment and of a series of machines for this purpose, including simultaneous fulfillment of loading-unloading and associated operations,

should be concentrated in one industry or made into a separate sub-industry, which would include the appropriate enterprises of the machine building ministries. It is clear that substantial significance should be attached to the solution of this problem in the CC CPSU plan for the 26th party congress.

The task set before the Soviet people in the Eleventh Five-Year Plan is to carry out at all levels of economic activity a system of measures aimed at fuller utilization of all types of resources. Significant work on the rational utilization of material resources is being conducted in our republic.

Last year alone goods worth 31.6 million rubles were produced from secondary materials at the Bobruysk, Borisov and Gomel' combines of Belkoopsoyuz /Cooperative Union of the Belorussian SSR/.

Enterprises of the republic's Ministry of Light Industry have organized for the recovery of production wastes 66 consumer goods units which in 1979 produced more than 400 types of goods worth more than 19 million rubles.

However, throughout the republic as a whole secondary material resources are still not adequately utilized. For example, economists estimate that every year about 700,000 tons of waste, including shavings and cuttings, are formed after the production of rolled products from ferrous metals at the republic's enterprises. The republic lacks the facilities for sorting the metal wastes, and this is one reason for their non-rational use. Calculations show that preliminary sorting and recovery of lump metal wastes on site could without additional capital investment bring the utilization factor for these metals up to 40 percent and reduce transportation costs by the same amount. For now, however, the consumer goods units which exist at a number of enterprises do not have the capability to recover even their own wastes. In our view, there is now a need for large-scale machine building enterprises to create units for collecting, sorting and final processing when necessary to achieve marketable form. Targets must be established for the output of products from metal wastes, and if they cannot be used by the unit which produced them, targets should be established for their transfer to other enterprises and organizations.

The hundreds of thousands of tons of production wastes created by the republic's chemical industry enterprises are also a cause of particular concern. A significant portion of these wastes do not find any practical application; they are stored or destroyed. For example, the Beloruskaliy Production Association has already accumulated hundreds of thousands of tons of waste salts and sludge from enriching factories. At present they occupy about 500 hectares of arable land.

In our view, the newly created Ministry for the Production of Mineral Fertilizers should speed up its work on the solution of these problems; in particular, it should test on a large scale a method developed by the Institute of General and Inorganic Chemistry of the Belorussian Academy of Sciences and the Belorussian branch of the All-Union Scientific-Research Institute of Halurgy together with the Beloruskaliy Association for obtaining slowly dissolving calcium fertilizers from clay sediment and cyclone dust. If positive results

are obtained, the production of granulated fertilizers of this kind can be brought up to 700,000 tons per year, and this would free a significant area from slag heaps.

In this connection there is another question which should be examined. At the present time many industries have not established any statistical accounting concerning the presence of wastes. For this reason the introduction of a single state statistical accounting would create a complete picture for all types of secondary resources and would serve as valuable initial information for planning and economic organs which are working out plans for the distribution and use of raw and secondary materials.

The labor collectives of Belorussia have accumulated valuable experience in the solution of economic problems. And we are striving, of course, to consolidate this experience, to build on what has been achieved and to correct those inadequacies which exist in our work. The working people of Belorussia will do everything possible to greet in worthy fashion the 26th CPSU Congress and to ensure the unconditional fulfillment of the magnificent plans of communist creation.

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